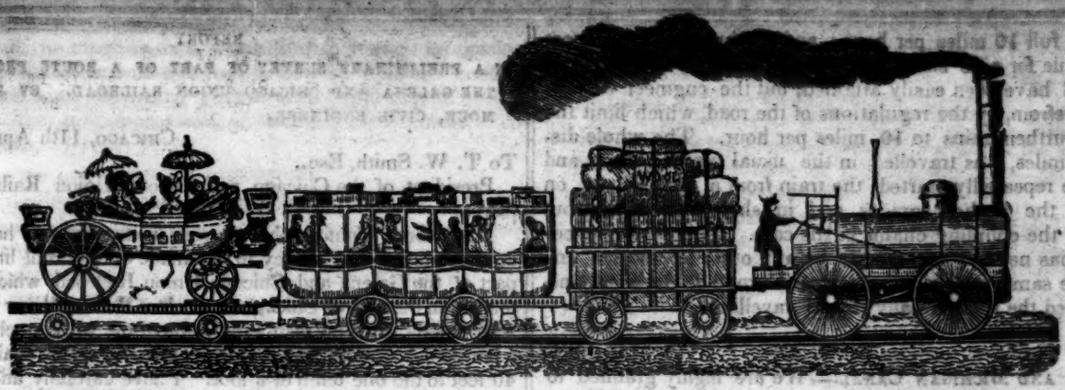

AMERICAN RAILROAD JOURNAL,
AND ADVOCATE OF INTERNAL IMPROVEMENTS.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, JUNE 17, 1837.

TO RAILROAD OR MANUFACTURING COMPANIES.

We ask attention to the following advertisement. The gentleman referred to will be found an acquisition to any company that requires the aid of a superintendant, professing skill, experience and character—and we shall take great pleasure in being the medium of communication to him from those who may desire information.—[Eds. R. R. Jour. and M. Mag.]

☞ TO RAILROAD COMPANIES.

A PERSON experienced in the construction of Locomotive Engines (many of his Manufacture being in successful operation on important Railroads in the United States) and who is likewise thoroughly acquainted with the management of such machines, and, indeed, the entire ordeal of Railroads, is desirous of obtaining the situation of General Superintendant on some Railroad, South or West.

The most satisfactory testimonials of character and capability can be produced. Communications addressed to the Editors of this Journal, stating the location of Road, &c. will meet with prompt attention.

9t—24

ENGINEER'S OFFICE, WILMINGTON AND RALEIGH RAILROAD, May, 4, 1837.

TO BRIDGE BUILDERS—Proposals will be received until the 30th June, for the erection of Bridges on the Wilmington and Raleigh Railroad, across the Neuse and Tar Rivers, Contentnea, Swift's, Fishing and Quanky Creeks. The Bridges will be built on the plan of Town. The greatest span will not exceed 120 feet, the frames weatherboarded and capped (not roofed.) The timber will be found.

For the piers and abutments, stone can be had, at the Neuse six miles by water from the bridge site—at Tar River it is found at the crossing—at Contentnea, the Bridge will rest on wooden abutments; at Swift's Creek, the rock is situated about 3 miles by water from the bridge site—at Fishing Creek it is found within a few hundred yards of the bridge on the bank of the creek—and at Quanky the quarries are situated about three miles by land from the proposed bridge. The piers and abutments will in no instance exceed 22 feet in height. For further particulars, address the subscriber at Wilmington, North Carolina.

WALTER GWYNN, Civil Engineer.

3t—24

TURNPIKE, NORTHWESTERN, VA.—Extract from a letter dated Clarksburgh, Va., June 1st.—In reply to the question of the writer of the letter, "whether we will receive *Virginia Bank Notes*, for what is due" us, we reply unhesitatingly, YES, and glad to get them. We receive *any thing* in the character of Bank Notes current where the Periodicals are received—although we *prefer* such Notes as have the *least discount here*—and we are sure that our subscribers will always send us that if they can obtain it.—[Eds. Railroad Journal.]

"The only public improvement in this section of the State, is the Virginia North-western Turnpike, now in progress of construction. It commences at Winchester, Virginia, and terminates at Parkusburg on the Ohio river, a distance of 226 miles, one half of which is completed, as are likewise the bridges over the South Branch of Potomac, and Middle Island rivers.—Those across the North Branch, Cheat, Tygart's valley river, and the West-fork of the Monongahela are rapidly progressing."

NORRIS' LOCOMOTIVES.—The following extract from the Philadelphia National Gazette of Saturday last, will prove as gratifying to our readers as it has been to us. We have ascertained that the statements therein made are perfectly correct. Mr. Norris' engines challenge competition with any others.

We have understood that recently in addition to its own train of 33 burden cars, one of his enginds took 18 passenger cars, making in all 51 loaded cars which were drawn around curves of 400 feet radius, the whole train occupying nearly a semi-circle—and this over a road never intended for locomotive power, and racked by the daily wear and tear of an immense travel.

Mr. Norris has made several engines for the Portage road, where one of them is constantly employed upon a long grade of 54 feet to the mile in descending, which, with a load of more than 100 tons it was able to stop in time to save the life of a man who had fallen upon the track.

We have been furnished by a friend with the following particulars, from Mr. Phleger, the engineer, of the performance of a locomotive engine, recently constructed for the State, at the manufactory of Mr. Norris, at Bush-hill. The engine left Columbia with a train of 31 cars, and after attaching five more, at several depots on the road, making a total load of 172 tons in 36 cars, proceeded to Philadelphia. With this great load of 172 tons, it passed up the Gap grade of 49 feet rise per mile, at

a speed of full 10 miles per hour; and on the grade of 32 feet rise per mile for nine successive miles, a speed of 25 miles per hour could have been easily attained, but the engineer was deterred therefrom, by the regulations of the road, which limit the speed of burthen trains to 10 miles per hour. The whole distance, 82 miles, was travelled in the usual running time, and the engine repeatedly started the train from a *state of rest*, on several of the highest grades and in short curves, without slackening the coupling chains of the cars. This performance, it is said, has never been equalled by any other locomotive engine of the same weight, nine tons, in Europe or America, and is considered the regular daily rate of travelling.

Illinois and Michigan Canal.—We are highly gratified to learn that this important work is progressing, notwithstanding the extreme scarcity of money. The Chicago American, says,—

Contracts, to the amount of about one million of dollars, were made by the Commissioners on Saturday last, and at about sixty thousand dollars *less* than the estimated prices. Laborers to almost any number can now find employment on the different sections of the line, and receive high prices. *Several thousands are wanted immediately.*

Detroit and St. Joseph Railroad.—We are happy to have it in our power to say that the Board of Internal Improvement are determined to complete the first thirty miles of this work by the 1st of September next. An additional number of hands are about to be employed upon it, and no pains will be spared to render it fit for use as far as Ypsilanti or Ann Arbor by the time above mentioned. One of the locomotives intended for it is now at Buffalo, and will be received here in a few days.—[Detroit Jour.]

☞ The following gentlemen were yesterday re-elected Directors of the New-Jersey Railroad and Transportation Company for the ensuing year, viz:—

John S. Darcy, W. W. Woolsey, E. Townsend, R. S. Colt, A. Day, A. Lee, G. P. Molleson, G. L. Schuyler, J. P. Jackson.

At a subsequent meeting of the Board, the following officers were unanimously re-elected for the ensuing year. John S. Darcy, President; John Worthington, Treasurer; John P. Jackson, Secretary; and William Pennington, Attorney and Counsellor of the Board.—[Newark Daily Adv. June 1.]

Chicago and Galena Railroad.—We copy from the Chicago American of May 27th, the report of James Seymour, Esq. Chief Engineer, formerly on the New-York and Erie Railroad.

Chicago only five years since, was not even a village, now she is a city, with her Mayor and Board of Aldermen, and will in less than five years more, be the center of an immense business. With a steamboat canal to the Illinois, Mississippi and Ohio rivers. With *one* railroad reaching her from the *east*, and *another* connecting her with the Upper Mississippi, whilst its branches will penetrate every part of the State. Chicago must become all that her sanguine friends have predicted. *It cannot be otherwise.* The Chicago American says, that

The first Report of *James Seymour, Esq.*, Chief Engineer on this Road, will be found in our columns to-day. It will, we have no doubt, attract great attention, both at home and abroad. This work will form the *last* link in the chain of railroads (all of which will soon, be completed) connecting the Atlantic with the Mississippi—the East with the great West. The charter of this company is of immense value, as it secures them the privilege of making *latteral* roads in any direction; and contains no restrictions as to the rates of toll which the company may tax. The country, too, through which the road will pass is very favorable, being flat and smooth, and requiring little more than laying down the rails to make the road complete. With such advantages, what can prevent the company from "going ahead" and reaping a rich reward for the outlay.

REPORT

ON A PRELIMINARY SURVEY OF PART OF A ROUTE PROPOSED FOR THE GALENA AND CHICAGO UNION RAILROAD. BY JAMES SEYMOUR, CIVIL ENGINEER.

Chicago, 11th April, 1837.

To T. W. Smith, Esq.,

President of the Chicago and Galena Union Railroad Company.

Dear Sir: Conformably to your instructions, I have caused an exploration and survey to be made of different lines for that part of the Galena and Chicago Union Railroad, which is to extend from the city of Chicago to the Des Plaines River, and herewith submit to you a map and profile of the work, each drawn on a horizontal scale of 500 feet to an inch,—vertical scale of profile 40 feet to the one tenth of a foot. I have carefully and minutely examined the lines in the field, and inspected the Estimate, Map, and Profile made in the office; and am satisfied, that of the four lines that have been traced, the best has been selected.

The length of the line is 9¼ miles, and the total cost of grading for a double track, and building a single one with the necessary turn outs, $78,952.

The estimate based upon the plan proposed, I have no doubt, is sufficiently liberal to meet all contingencies, and to construct the work within the amount specified. For more minute particulars, I would refer you to the report of my assistant, Mr. P. H. Ogilvie, who conducted the survey. It is estimated, that part of the embankment is to be taken from ditches cast on both sides of the road throughout; the ditching serves the double purpose of keeping the road-bed dry, and draining the prairie.

The embankment estimated for that part of the road where piling is required, may at present be dispensed with, provided it be not deemed necessary to drain the prairie. Should both these suggestions respecting embankment and drainmg be disapproved of, and it be proposed to grade, at present for a single track only, then $15,000 may with safety be deducted from the estimate.

In either case, should the whole be constructed by one contractor, or firm—responsible men, it may be done for at least $12,000 less than the estimate, by adopting the following plan, viz:

1st. Erecting a steam saw mill, at the Des Plaines River, for the purpose of sawing the cross-ties, rails, longitudinal sills, and wedges, and preparing them for the work.

2d. Commencing the road at the Des Plaines River.

3d. Procuring a small locomotive engine, and railroad car, to convey the timbers to their destination, as fast as the wooden superstructure progresses; the same engine to be used in driving piles; all of which may be done previous to placing the iron bars on the road, the whole distance of which is so perfectly straight. In this way the wooden superstructure may be completed from the Des Plains River to the south branch of the Chicago River where the iron bars can be shipped, and put on board the car for distribution along the line.

Nevertheless, I would recommend grading for a double track, for the following reason, viz: The company's interest to assume the privilege of the Act amended and passed in their favor, 4th March, 1837, and thereby to extend a branch of the road south of west, to connect with the Central Railroad to Galena, and another branch north of west, to cross the Du Page, Fox and Rock rivers; thence entering the valley of the Peckatonica, traverse the mineral region, in the direction of Galena; thus securing to the company the vast avails of travel and freight to be attracted in traversing the rich and fertile regions of the west, and forming a most important link in the grand projected scheme of connecting the Atlantic with the Mississippi—a scheme, the completion of which will induce thousands to visit us, and scatter their wealth and influence throughout the country.

As far as I am acquainted with the face of the country between the Des Plaines and Fox rivers, it is mostly uniform, higher, and much drier, than it is east, for which reason, the construction of either or both branches of the Road, will be attended with much less expense per mile, than that part of the work herewith rendered.

I have made no reconnoissance, personally, of the country a far west as Rock River, but from the best information I can obtain from intelligent men, a similar uniformity of surface and dry prairie prevail in the direction of either branch proposed—thus affording to the company the facility of constructing a cheap and permanent railroad west to that river.

There are no tangible data, wherefrom to venture an opinion, as to the probable amount that may be derived from the contemplated work, until explorations, surveys, and estimates of cost be made for either branch proposed, or that of a middle route to the Rock River.

GENERAL REMARKS.

Vast is the latitude of the charter granted to the Company, and pregnant with advantages; especially the 6th section, empowering the company to place the main line of road wherever their interest may direct, and constructing such lateral branches as they may think proper, to give effect to that interest—together with the unlimited power of fixing and regulating the tolls upon each and every one of these routes. I know of no project where capital may be more safely invested, or where there is a greater prospect of a large and speedy return.

By the Company's selecting valuable lands, and judiciously fixing on important points, the road may, soon after completion, with proper management, be made to pay the cost of construction, as it progresses from piece to place.

Your charter invests you with the privilege of extending the Road to the eastern boundary of the State, forming a connecting link of a chain of railroads now in progress through Indiana, Ohio, and part of Pennsylvania, thence to Buffalo, in the State of New-York—thus opening a direct communication with this State and Pennsylvania, whose lakes, canals, and railroads, now in use for the transfer of freight and passengers, together with the immense transport of merchandise and influx of emigrants by way of Lakes Erie, Huron and Michigan, render the completion of the work in question, an all important operation. All of which is respectfully submitted by,

Dear sir, your ob't servant,

JAMES SEYMOUR.

From the London Mechanics' Magazine.

HOLLOW CYLINDROIDAL RAIL FOR RAILWAYS.

Fig. 1.

Fig. 2. Fig. 4.

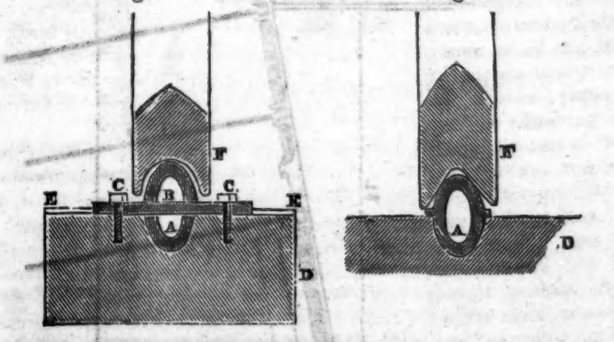
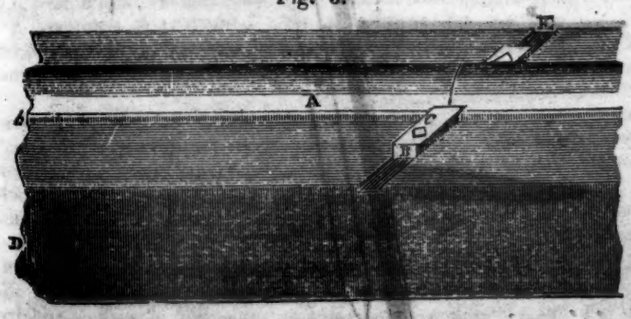


Fig. 3.



Sir,—The following is a description of a new form of rail, in which the strength of the arch is brought into operation—and which I think will be found worthy the attention of railway engineers.

Fig. 1 is a perspective representation of the disjointed ends of two rails, AA, with the cross-bar B, which, entering the nothces *aa*, binds them firmly to the longitudinal timbers D.

Fig. 2 is a transverse section of the rail, &c., showing its elliptical shape, with the proposed form of tire (F) for the wheels of the carriages, and the mode of securing the rails—nearly one-half being buried in the timbers D.

Fig. 3 is a perspective view of the whole when put together.

The timbers are proposed to be of Kyanized oak, and laid in concrete; the two lines of each track being truly parallel, and connected throughout by ties. The longitudinal groove, in which the rails lie, should be cut out by machinery, a perfect fit being thereby ensured.

The advantages anticipated for this arrangement are—

1st. Greater ease and smoothness of motion to the carriages. Gravity would keep the wheels in a perfectly straight line. By this mode also of connecting the rails and timbers, lateral disconnection of the bearing surfaces would be rendered impossible, and all jolting in consequence avoided. A rib, *b b*, is proposed to be formed on each side of the rail, for further security, as well as to prevent wet insinuating itself between the rails and timbers.—The groove E E, in which the cross bars slide, will also diminish the strain upon the screws *c c*, caused by the action of the propelling wheels.

(With all deference to the experience of Mr. Vignoles, whose system of continuous timbers I have here adopted, I would ask, if the oft-repeated rapid rolling of a mass of iron, six or eight ton in weight, would not soon loosen rails that are merely nailed or screwed on to their bearings, without at all entering the wood?)

2nd. Greater strength of rail from the same weight of iron.—The lower half being firmly bedded in oak, the upper presents an arch to the incumbent pressure.

3rd. A more convenient (and, as above shown, a firmer) method of fixing the rails. In order to remove a rail for repair, it would be merely necessary to withdraw four large screws, and knock out two bars, when it might be lifted out.

4th. Economy in wear. When it has become no longer safe to use a rail in its original position, the simple operation of reversing it would present a new surface as firmly fixed as the first. A bar rail, if formed with this view, would obviously not be held so securely in its second position; it might probably therefore be found advisable, to make the bearing portions of the tube somewhat thicker than the rest.

Should it be objected that the narrow bearing surfaces would induce rapid destruction of the wheels, I reply, that the weight of the engines (the heaviest load, calculating *per wheel*) might probably be lessened. On the present plan a considerable weight of engine is necessary to give cohesion between the propelling wheels and rails: this I propose to effect by the form of tire represented in fig. 4, which would also give additional safety at high velocities, by diminishing the liability of the train to get off the tracks. (What has become of that beautiful little engine, the "Novelty?" I trust Messrs. Braithwaite have not abandoned the idea of bringing so elegant a construction into use.)

Probably cast iron might be the cheapest, as it would be the firmest material for hollow rails; but they might be rolled out with a core, in the mode used for gun barrels.

Another advantage of this system, not immediately connected with the subject, has since occurred to me. Various schemes have been proposed for the rapid communication of intelligence between distant places—some of them not a little expensive.—Here is a speaking-pipe ready made; for, were such a plan really feasible, some other mode of fixing the rails might be adopted, which would not interrupt the transmission of distant sounds.

London, 16th March, 1837. J. R.

P. S.—I would add a word on the subject of cost, though having no *practical* knowledge, I can give no very satisfactory account. It appeared to me, that on this plan the rails need not be longer than six feet. If cast then, the greatest addition to the expense would be the additional weight of metal. But as my rails will admit of being turned, when worn, they cannot fairly be compared with others, weight for weight. Perhaps some company might think it worth while to *try* how much substance would be necessary for this form of rail, for without experiment no correct idea can be formed on this point.

IRON WHARFING AT EAST INDIA DOCKS, BLACKWALL.

Plate 12.

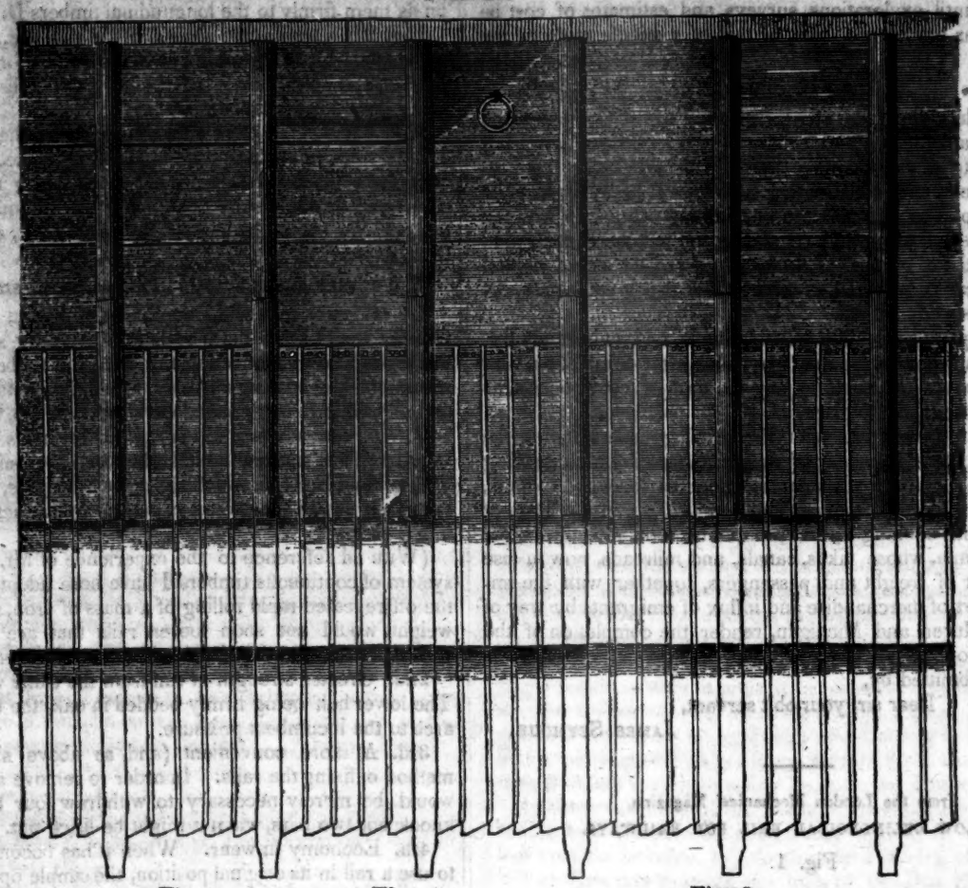
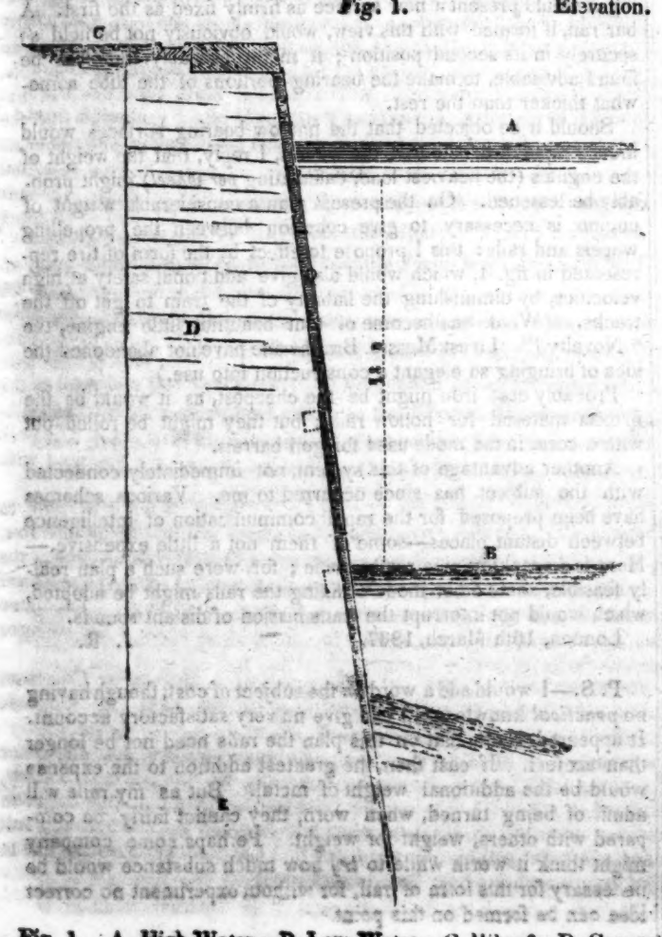


Fig. 1. Elevation. *Fig.* 2.



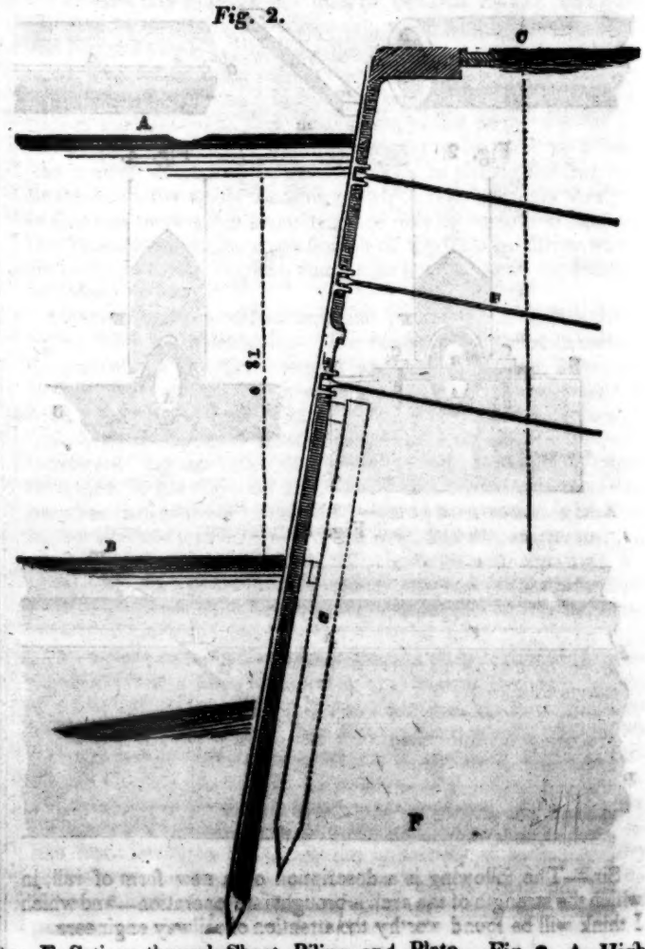
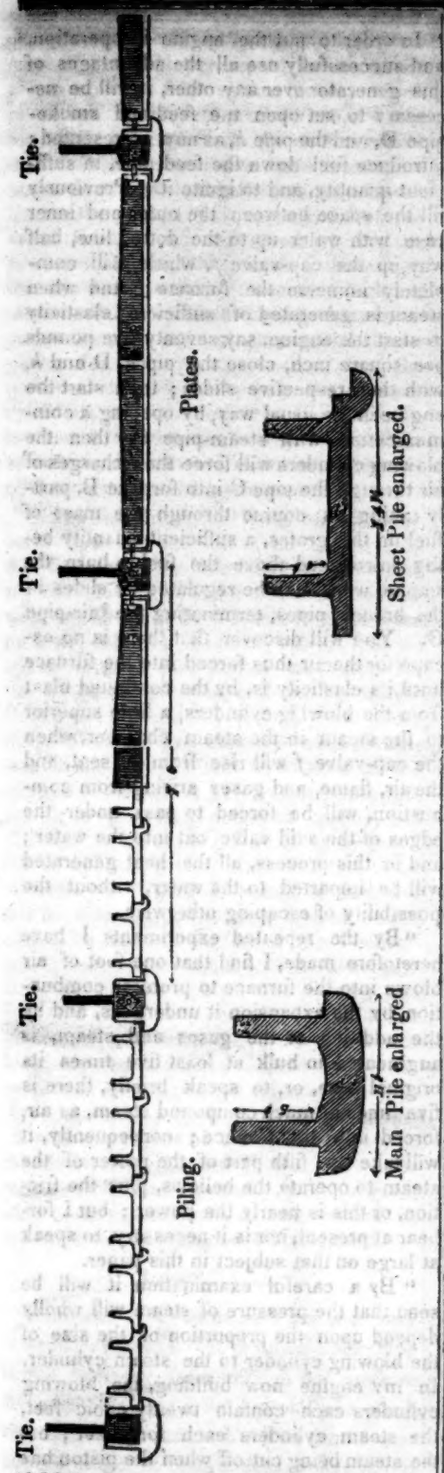


Fig. 1. A, High Water; B, Low Water; C, Wharf; D, Concrete; E, Seticon through Sheet Piling and Plate.—**Fig. 2.** A, High Water; B, Low Water; C, Wharf; D, Guide Pile; E, Laid Pile; F, Section through Main Pile.



XXIV MEMOIR ON THE USE OF CAST IRON IN PILING, PARTICULARLY AT BRUNSWICK WHARF, BLACKWALL. BY MICHAEL A. BORTHWICK, A. INST. C. E.

Concluded.

The main piles were originally proposed to be hollow in section, according to the sketch following; but this was given up on further consideration of the uncertainty of procuring sound castings of the intended form, and of the greater liability to break afterwards from a blow sidewise. The solid form shown on the plate was therefore adopted, according to which the lower lengths weighed about 28 cwt.; and that this was not too much was shown by the circumstance of several of the piles, particularly the early ones, breaking in the testing or driving, and showing in the fracture the danger of even a slight defect. The greater care

subsequently taken at the foundry, and probably also greater experience in driving, made accidents of this kind of rarer occurrence in the later stages of the work; and it may be mentioned as no bad proof of the care of all parties, that of upwards of six hundred piles, including both descriptions, only sixteen broke in driving, seven being of one sort, and nine of the other:—the failure was in five cases attributed to strains in driving, and to imperfections of casting in the other eleven. The sheet piles, which bear a considerable resemblance in their general outline to those used at Downes Wharf ten years before, were proposed to be an inch thick, but it was found necessary to increase this dimension, and some of them were as much as 1¼ inch; the average, however, was not above 1⅛ inch, and the weight of each pile 17 cwt. The length of the wharf is about 720 feet, and the whole weight of iron used upwards of 900 tons.

The crab engine was employed invariably, the heads of the piles being covered with a slip of ¾ inch elm, to distribute the force of the blow equally over the iron, and prevent jarring. The monkeys used weighed from 13 to 15 cwt. each, and it was found necessary to limit the fall to a height of 3 feet 6 inches, and sometimes less, when the resistance proved more than usually great and the pile showed a tendency to turn from its straightforward course. The driving throughout was very hard, more especially at the west end, where the sheet piles in four bays could not be forced to the full depth, the space above being in two of them made up with two plates in height, and in the other two admitting only one, instead of three as in the rest of the work. Driving was the only means resorted to, or indeed practicable in the gravelly soil that prevailed. Had the bottom been clay or other similar substance, the plan of boring to receive the points, that has been followed elsewhere, might probably have been partially adopted in the main piles with advantage; but I should say, certainly not to the extent of depending mainly upon it for getting the piles home to their places.

I cannot quit the subject of the Brunswick wharf without stating that his avocations alone have prevented Mr. George Bidder's association with me in the account of a work, the execution of which he had, under Messrs. Walker and Burges, the charge of superintending. Though rejoicing at the cause, I cannot help regretting the circumstance in the present instance, as such co-operation on the part of my friend would, I feel, have given this paper an interest and a value it has now but little claim to. I take this opportunity also of acknowledging my obligation to several of the gentlemen above named in connection with the previous use of iron piling, whose kindness has enabled me to make the preliminary review much fuller than I had at one time any expectation of having the power to do.

Effects of water on iron.

It remains for me only, in conclusion, to advert to a consideration that ought not to be lost sight of in deciding upon the eligibility of cast iron wharfing,—I mean the action of water upon it. I do not recollect any observations made so as to enable a practical inference to be drawn from them; but the importance of the subject seems to claim attention, and possibly even this notice may be the means of inducing it from those who have the opportunity. The investigation belongs perhaps rather to chemistry than engineering, but notwithstanding the practical turn some of the most distinguished cultivators of that science have given their researches, little I believe has yet been done to explain the present question. How iron is affected by water in its various states, and in what manner the action on *wrought* differs from that on *cast* iron, are interesting points, still, so far as my information goes, to be determined; and they are not likely to be so in a satisfactory manner, until some one competent to the task calls a series of well conducted experiments in aid, as every day shows more clearly the uncertainty of analogical reasoning, however apparently strict, on such subjects. But whatever the *modus operandi* between cause and effect, that decomposition of the metal, more or less rapid, gradually goes on from the action of water, seems to admit of no doubt. Professor Faraday, in a letter to Captain Brown, says, "Cast iron is certainly liable to great injury from constant immersion in salt water, and I think you would find few, if any exceptions, provided the water and the iron are in contact."* And the *saline principle*, to use a somewhat antiquated form of expression, though a great accelerator of the process, does not appear to be altogether an essential to it;† at least, I know a case that happened in a part of the River Thames where the water cannot be said to be more than brackish at any time, and indeed is generally quite fresh, in which cast iron, after being immersed for little more than 20 years, was on being withdrawn from the water, found so soft as to yield to the penknife; and the original surface of the iron referred to,—it was the socket-plate to the heel-post of a lock-gate,—had not been submitted to the tool, in which case it is well known the water would have operated with much greater effect.

But though I have thought it well to glance at the above case occurring in water, always except on rare occasions fresh, the sea is no doubt in practice the invader whose inroads are most alarming. Instances might easily be cited in proof of the ravages

* *Description of a Bronze or Cast-iron Columnal Lighthouse, &c., by Captain Brown, R. N.*

† The difference between sea and other water, in operating with the Galvanic battery, is much less considerable than that between the latter and distilled, but it is between *salt* and *fresh* that the practical question lies in the present case.

committed by that active enemy, though not perhaps noted so circumstantially as is desirable, but I am unwilling to lengthen this communication further, and shall therefore confine myself to a passing allusion to the example on a large scale, and after long trial, furnished by the state of the guns taken from the wreck of the Royal George, as described at at a late meeting of the Institution ;* and to a similar instance mentioned by Berzelius, in a passage which I quote at length, not so much however in confirmation of so well established a fact as the eventual decomposition of cast iron by the action of water, as for the properties mentioned of the substance into which the metal is resolved. The extract is as follows :

" Quand la fonte reste long-temps sous l'eau, elle est decompose'e ; l'acide carbonique contenu dans l'eau dissout le fer et l'entraine ; il reste une masse grise qui resemble a la plombagine. Lorsqu'on retira de l'eau, il y a quelques anne'es, les canons d'un vaisseau qui avait coule' a fond cinquante ans auparavant, aux environs de Carlscrona, on les trouva au tiers converti en une pareille masse poreuse ; a peine e'taient ils a l'air depuis un quart d'heure, qu'ils commence'rent a s'e'chauffer tellement, que l'eau qui y restait encore s'e'chappa sous forme de vapeur, et qu'il fut impossible d'y toucher. Depuis, Maccu loch a observe'† que le corps analogue a la plombagine qui se forme ainsi presente toujours ce phe'monene, et que ce corps s'e'chauffe presque jusqu'au rouge, en absorbant de l'oxygene. Ou ne sait pas pre'cisement ce qui se passe dans ce cas." *Traite' de Chimie*, Tom. III. p. 273.

* *Min. of Convers.* Vol. V., No. 12.

†The observation referred to by Berzelius in the above, occurs in *Macculloch's Western Isles of Scotland*, (I think in the account of the island of Mull,) where an explanation of the phenomenon was first attempted, though, if on such a subject I may " hint a doubt," not to my mind quite a satisfactory one. A more perfect solution will probably be furnished by whoever, availing himself of the powerful means of chemical analysis now possessed, may undertake such an investigation of the whole question of the action of water on iron as I have ventured to allude to in the text.

From the Journal of the American Institute.

BENNET'S STEAM ENGINE.

A model of an engine, constructed upon the principles of those which are to be employed in propelling Capt. Coob's steamer between this and Liverpool, has been at the Repository of the Institute for several weeks past. A throng of visitors have constantly surrounded it. Between the hours of eleven and one, Mr. Bennet has attended, and explained its operations. It has undergone the scrutiny of great numbers of scientific professors, ingenious and experienced mechanics and engineers, citizens and strangers Mr. B. by request, has kindly given all the explanations requisite to a perfect understanding of its operations, and answered the ten thousand questions that have been propounded, with a clearness, simplicity, and patience, that is highly creditable. He has invited objections, that he might have an opportunity to meet them, and if found to be serious, that seasonable remedies might be provided. The examinations have resulted in a general conviction that the world is about to realize a new improvement, not inferior to that of Watt and Bolton—an improvement that will effect a new era in ocean navigation, and bring all parts of the world in approximation to each other. A voyage to Liverpool, it is believed, may, by the power of this engine, be accomplished in ten days, with one-tenth of the fuel heretofore required.

We have requested Mr. Bennet to give a minute description, accompanied with a drawing, which, we hope, will enable the readers of the Journal who have not visited the Repository, to comprehend what to us was incomprehensible, till we examined the model, and heard the explanation, how the fire and the water could be brought and continued in actual contact with each other, and, rapidly generating the steam, still kept in control, and its potency safely directed to propel the car or the ship.

The following is the description which Capt. B. has been so obliging as to prepare for us.

" The engine for the Liverpool packet, is a double horizontal high pressure engine, thirty-five inch cylinder, six feet stroke, with two blowing cylinders, of half the capacity, worked by the piston-rod of the steam cylinder passing through the lower or extreme head, and into the blowing cylinders ; consequently, both will be of the same motion. Pipes C, with the necessary valves attached to the blowing cylinders, convey the air to the steam generator, whose outer case (*a a*) is four feet diameter, and twelve feet high, and the inner case, or furnace B, is three and a half feet diameter, and nine feet high.—Smoke and feed-pipe D, is constructed with two slides, (*e e*,) which closes the pipe perfectly tight when thrust into it ; their uses will hereafter be explained ; *f* is a cap-valve in the steam chamber, placed over a short pipe or nozzle on the upper head of the furnace, and fitted to its seat perfectly tight, with a rod extending through the upper head of the outer case ; *g* is the ash-pit below the grate ; *h* an opening into the ash-pit, with a slide to close it tight, when necessary.

In order to put the engine in operation, and successfully use all the advantages of this generator over any other, it will be necessary to set open the feed and smoke-pipe D, and the pipe *h*, as now represented ; introduce fuel down the feed-pipe, in sufficient quantity, and to ignite it. Previously fill the space between the outer and inner case with water up to the dotted line, half way up the cap-valve *f*, which will completely immerse the furnace ; and when steam is generated of sufficient elasticity to start the engine, say seventy-five pounds per square inch, close the pipes D and *h*, with their respective slides ; then start the engine in the usual way, by opening a communication with steam-pipe *i* ; then the blowing cylinders will force their charges of air through the pipe C into furnace B, partly taking its course through the mass of fuel on the grates, a sufficient quantity being introduced above the fuel to burn the smoke, which can be regulated by slides in the branch pipes, terminating the air-pipe C. You will discover that there is no escape for the air thus forced into the furnace until its elasticity is, by the continued blast from the blowing cylinders, a little superior to the steam in the steam chamber, when the cap-valve *f* will rise from its seat, and the air, flame, and gases arising from combustion, will be forced to pass under the edges of the said valve out into the water ; and in this process, all the heat generated will be imparted to the water, without the possibility of escaping otherwise.

" By the repeated experiments I have heretofore made, I find that one foot of air blown into the furnace to promote combustion, by the expansion it undergoes, and by the addition of the gases and steam, is augmented in bulk at least five times its original size, or, to speak briefly, there is five times as much compound steam, as air, forced into the furnace ; consequently, it will take one fifth part of the power of the steam to operate the bellows, plus the friction, or this is nearly the power ; but I forbear at present, nor is it necessary, to speak at large on that subject in this paper.

" By a careful examination it will be seen that the pressure of steam will wholly depend upon the proportion of the size of the blowing cylinder to the steam cylinder. In my engine now building, the blowing cylinders each contain twenty cubic feet, the steam cylinders each forty feet ; but the steam being cut off when the piston has made but one half its entire stroke, which reduces its size, as a measure to deal out the steam, to exactly the size of the blowing cylinder—the measure of the air forced in by the blowing cylinders being augmented, by passing through the generator, to five times its bulk, has to be forced into a space in the steam cylinder of just its original bulk ; it will, therefore, exert a force equal to five atmospheres, which will be sixty pounds to the square inch above the atmospheric pressure.

" This force, per inch, will not be exerted during the whole length of the stroke of the piston, but only half way, or to where the steam is cut off ; and at the end, its elastic force is reduced to about twenty

pounds, which will make the average pressure fifty pounds per square inch, and the piston contains 962 square inches, which multiplied by 50, will produce 48,100 lbs. the whole average force the piston moves with. It is calculated to have the engine make thirty-five double strokes per minute; hence, the piston will move 420 feet per same time, which multiplied by 48,100, produces, 20,202,000 pounds; the weight that the piston would lift one foot high per minute, divided by 33,000, being what a horse power is estimated at, gives 612 horse power for each steam cylinder. But the power abstracted to operate the blowing cylinders, and overcome the friction, I allow nearly equal to the power of one of the cylinders; therefore I estimate the power of the engine at 612 horse power.

"The amount of fuel consumed, will depend upon the amount of air forced into the furnace by the blowing cylinders, and my two blowing cylinders, at every revolution, would force in 80 feet, if there were no leak either in piston or valves, and no space between said piston and valves for the air to compress in, and not be wholly forced out; therefore, probably not more than 75 feet will be expelled each revolution of the engine; and as it takes all the oxygen contained in 175 feet of atmospheric air to burn one pound of carbon, and 525 feet to burn one pound of hydrogen, I am of opinion, that to allow 225 feet to be necessary to burn one pound of fuel, will not be allowing too much; and, as before stated, 75 feet will be forced into the furnace at each revolution, it will therefore take three revolutions to burn one pound; and as a cord of yellow pine weighs about 2,100 pounds, it will take 6,300 revolutions to burn one cord, which, divided by 35, the motion of the engine per minute, will give three hours for each cord—which, compared with the engine of the steamer Erie, on the Hudson, of little less or nearly the same power, (600 horse power,) will consume forty cords in ten hours, or twelve cords in the same time; my engine will one cord."

WHITNEY'S TUNNEL.—This is a very convenient article. It is made something in the ordinary form, though not quite so bevelling, and has a flat bottom, into which the nozzle is inserted. The tunnel has several ridges at certain distances round its body to designate different measures, as a gill, half pint, pint, quart, and 2 quarts. There is also a valve on the top of the nozzle, which is pressed close to its place by the liquid in the tunnel, so that it may be used as a measure of either of the above mentioned sizes. This valve is so arranged as to be opened by a slight pressure on a thumb piece—which lets the whole, or any portion of the liquid escape, as may be desired. By this arrangement this article serves as a measure of different dimensions, and also as a tunnel, and will be found a very convenient article. It may be seen at the American Institute, 187 Broadway.

INCLINED PLANE, AND MODE OF ASCENDING BY LOCOMOTIVE POWER. ALDRICH'S PLAN.—We have recently examined the model of a *Railway* and *Car*, constructed by Mr. E. F. Aldrich.

The rails are, except on the planes, like other rails; at the planes there are side posts, with rails on their top, so arranged as to receive upon its surface a small wheel with cogs, or pins on the *outer* end of the *Journals* of the driving wheels. This upper rail receive the small wheel whilst the large one rests upon the main rails, but as it advances, the upper rail has a little more elevation by which the main wheel is raised from its bearing, and the whole load resting on the hind wheel, rests upon the small wheels on the outer end of the Journal. By this arrangement the velocity is of course greatly diminished, and the power increased. On the periphery of the small wheels are short pins, or cogs, which work into corresponding holes or cogs on the *upper* rail, which carries the load forward, even when the inclination is too great for adhesion. There is attached to the center of the axle a bar, or rod of iron which we supposed to be designed for arresting its progress in descending—but having no description or explanation, we cannot tell precisely what it is for.

This model may be seen at the American Institute.

We are happy to learn that the Rev. H Colman, has been selected to the important station as below.

APPOINTMENTS BY THE GOVERNOR.

Henry Colman of Boston, to be Commissioner for making an Agricultural Survey of the State, and Edward Hitchcock, of Amherst, to be Commissioner for making a further Geological Survey of the State, severally under Resolves of April 12, 1837.

NEW LOCOMOTIVE POWER.

An advertisement appears in our paper this morning, on a subject which cannot fail to arrest the attention of all who feel an interest in the internal improvements of the country, apart from the novelty of the movement. The invention is entitled to a fair examination, from the immense advantages which must accrue to the public, in case the new and ingenious locomotive power shall stand the test of experience.

We find the above paragraph in the Philadelphia U. S. Gazette—but not the advertisement referred to. We should like to know more of this power.—[Eds. Mechanics' Mag. and Railroad Journal.]

REVOLUTIONARY DOCUMENT.—The following is a copy of a document found among the papers of a Revolutionary officers now no more, who took an active part in the stirring scenes of that period. It appears to be a statement of the proceedings and expenses —*in continental money*, the currency of that day—of establishing the claim of Messrs ———, ——— & ———, to certain goods which were seized at Woodbury, N. J., on the 11th of August, 1780. It is an interesting document, exhibiting the great depreciation of the currency of the days in which our fathers fought and bled for liberty.

"An Account of Cost and Expenses of the Seizure of the Goods belonging to ———, ——— & ———, at Woobury, N.J., 11th day August, 1780:

Going to Newark Mountain, for advice of the Attorney,	50 Dollars.
Cost of Jury,	67
Going to Elizabeth Town,	65
Horse Hire and Time,	120
To procure a Witness to go to Philadelphia,	8
The Expens s of going to Phia., Brunswick Ferry,	12
Brunswick all Night,	116
6 Mile Run,	60
Maidenhead,	54
Trenton Ferry and Way,	50
Bristol,	90
Nesnamony Ferry,	16
10 miles from Phia.,	23
Phiadephia,	545
On Return Red Lion one night,	112
Neshamony Ferry,	16
Pens Manor,	36
Trenton Ferry,	45
Trenton,	30
Prince,	90
6 Mile Run,	116
Hire of Horses and Wagon at 210 Dols. per Day, 5 Days is	1050
The Evidences and my Time going to Philadelphia, 5 Days each, at 70 Dollars per Day,	700
To get White Matlacks Deposition,	
To getting some Bills Proved at Elizabeth Town,	9
For the Evidences going to Elizabeth and attending the Trial,	140
Our own time in attending Trial,	214
Docts. Lester and Gallauder, attending Trial one Day,	140
	4000 Dollars.

Which makes £1500."

CONVENTION.—The proceedings of the AMERICAN Institute, of which the following is a copy, in relation to "a *General Convention from all the productive portion of our country,*" are worthy of, and should receive from every friend of his country, immediate attention, and deep consideration. We are at present, in the midst of a calamity which has prostrated thousands, and will reduce thousands of others from competence, to indigence; and it therefore becomes the duty of those who can trace the evil to its source, to counsel together, and if possible to devise and recommend a remedy. It cannot be otherwise than that good will result from such assemblage of intelligent practical men, from all parts of the country; the more so as it is designed to be composed alike of all parties, and yet *not* to be in *any* way political.

We ask for the circular, an attentive perusal, and trust that it will meet with advocates, and immediate action in every State in the Union.

AT A MEETING OF THE AMERICAN INSTITUTE OF THE CITY OF NEW-YORK, HELD AT CLINTON HALL, IN SAID CITY, ON THE 18TH DAY OF MAY, 1837,—IT WAS

Resolved, 1st. That the present condition of our commercial community generally is that of the most painful embarrassment, and that the distress is rapidly extending to all the other occupations and departments of productive industry, and that thousands of our most industrious and useful citizens have been dismissed by their employers, and their wages, the sole reliance for their daily food, their clothing and habitations, have within a few days been entirely cut off.

2d. That it is of vital importance, that the causes of this wide-spread distress should be early and fully understood, so that remedies, as far as practicable, may be provided for existing evils, and preventives to guard against future evils.

3d. That, in the opinion of this Institute, the multitude of discordant views promulgated, in relation to the causes of our present disastrous condition, have led to popular errors, that have in a measure turned the public mind from the accumulating debt in favor of foreign nations, which the repeal of countervailing protective duties has swelled against us, which is now pressing on our banks, and incapacitating them from administering relief to their suffering customers.

4th. That the only way to correct the public mind, and restore confidence, regularity, and prosperity, is by the dissemination of correct knowledge among the people, as to the prominent causes of our embarrassment, and by producing a general concert of action in applying suitable remedies.

5th. *It was also Resolved*, That a General Convention of representatives from all the productive portions of our country, without distinction of parties, for the purpose of a full and candid exchange of sentiments, and a thorough investigation of cause and effect, and concert in action, would greatly conduce to a favorable state of things, and, it is hoped, hereafter may prevent the recurrence of those evils with which we are now visited; and that it be recommended, that the said convention be held at Philadelphia in the State of Pennsylvania, on the first Tuesday of August, 1837, at 10 o'clock A. M., and that it consist of business men, selected from the productive classes, and that they continue, by adjournment, to meet until the desired object be attained.

6th. *It was further Resolved*, That, as the American Institute was incorporated to encourage agriculture, commerce, manufactures, and the arts, in this State and the United States, it is peculiarly appropriate, that it should recommend and forward such measures as are calculated to advance the great interests of industry, and produce a sound and healthy state of things; and especially on occasions like the present, when the banks acknowledge their inability to supply the requisite circulating medium, and every occupation is experiencing the most intense suffering.

7th. *It was finally Resolved*, That, in order to render this convention effective, and procure a full representation of business men, delegates be invited from all the States —the cotton growing as well as the grain growing, manufacturing, and commercial— from cities, counties, towns, and agricultural societies, incorporated manufacturing and mechanic associations, as well as railroad and canal companies, and that a committee be appointed, on behalf of this Institute, to consult with the friends of national industry, and solicit the concurrence of all those friendly to the foregoing objects; and that meetings be held at an early day, to elect delegates to respond to this recommendation; and that suitable papers be prepared and published, in order to give publicity to the convention and its objects, and to impress on all interested the necessity of general attendance, concert, and co-operation.

JAMES TALLMADGE, *President.*
EDWIN WILLIAMS, *Recording Sec.*
T. B. WAKEMAN, *Corresponding Sec.*

☞ Editors of newspapers, &c., friendly to the cause of national industry, throughout the United States, will oblige the Institute by giving the foregoing one or more insertions.

From the New-York Farmer.

GENTLEMEN,—In answer to the article in No. 6 of the Farmer, on the management of Bees, I will give you the result of a long experience on the subject. I consider the plan of Mr. Hebert, French economist, decidedly the best. His hives are composed of several, 10 or 12 parts, of about one and a half inches each in width, placed side by side, and confined by two rods, with keys to hold them together. The following description will probably be more intelligible. Take a common hive and divide the top and sides into 8, 10, 12 or *more* parts of 1½ inches in width, and with a saw cut it into as many parts—then these parts are to be placed together, and confined by pieces of board across two sides, with keys on each end to confine the parts together. The advantage of this hive will be found in the facility with which it can be increased or reduced in size. Its internal arrangement is such, that the bees build their comb in strata, which never exceeds 1½ inch in thickness, to correspond very nearly with these divisions of the hive, by which the hive may be divided, and additional parts put to each, thereby making *two* swarms, or the swarm may be enlarged to almost any extent, or you may, at your pleasure, take one or two parts from the side, or centre, of the hive, with as many strata of comb for use, with very little injury to the remaining part of the comb; replacing an equal, or any other number of parts of the hive.

By this process very few bees are destroyed, it is therefore entitled to consideration with every humane and reasonable person; notwithstanding the writer referred to, Mr. G. L. Smartt, considers it no inhumanity to destroy this useful little insect; or not more so than to destroy beavers, or cats for their fur, or fish for manure. This is by no means a fair comparison, as those can only be useful when dead, and therefore the order of things justifies the act, whereas bees *can easily* be preserved, and will, with proper care produce the *value of a good beaver skin every year.* With this hive, which opens like a book, you may take from it any proportion of its contents you please, and preserve the bees for further use.—When you desire to take away a part of the honey, seperate the hive, and to that part in which the queen is attach the new part, or parts, of the hive, and leave the part to be removed exposed to the light for a short time and the bees will soon seek the queen, leaving the part to be removed nearly deserted, and in a day or two, they will be quietly at work in filling the vacant part. This operation should always be performed two months before the close of the working season. You may also change bees from one hive to another if you desire, by taking off the outside of each and putting the hives together, closing up the entrance and drumming on that in which the bees *are*, which will drive them into the empty hive. Their progress can be readily ascertained by listening at the hive.

These operations to be performed after sunset, or before sunrise.

A CLOSE OBSERVER OF BEES.

CITY AND COUNTRY LIFE.

We copy the following article from the "New-York Daily Express" because there is *much truth in it.* It is too true that agri-

culture is not *justly* estimated—Parents who have accumulated a fortune by cultivating the soil, prefer to make any thing but *farmers* of their sons. This should not be so. *Educate them well*, and then use all proper means to induce them to cultivate the soil—with education and such habits they are prepared for any station to which they may be called in the service of their country. They know the *value* of liberty, property, and independence, and will always be safe agents to employ to discharge public trusts.

From the New-York Daily Express.

LIFE IN THE COUNTRY AND CITY.

The poets of old Rome sang in loud strains the praises of the country, and happy was that Roman who had his farm, his garden, or villa, around the base of Soracte, or on the shores of the beautiful Baiae.—Cicero was a farmer, as well as a statesman and an orator. All the illustrious men of Rome delighted in quitting the Forum, the Campus Martius, and the walls of "the Mother of Empires," to pass the summer solstice in the cool groves, with nymphs and satyrs,—or, in the season of the harvest, to rejoice with the bacchanals, and to see them frolic in the games. Even so in England, and the Continent of Europe now. London, the mistress of modern times, as Rome was of the olden, is deserted of much of its population in summer and autumn. The possession of land is the passport to gentility in Europe. The great Metternich boasts of his famous vineyard on the Rhine. A landed estate is the first aim of nobility in England. Titles, there come from land. Hence agriculture is the work of science and of art, and as much knowledge and art are demanded to cultivate and to lay out the park, to adorn it with trees and with fountains, as to fill the gallery, or the studio, or the niche of the palace.

How happens it then that in *our part* of our country—it is not so in the South,—that agriculture is avoided, as much as it can well be,—that the son flies off from the fields to the counter, the daughter to the city or the factory—all panting to exchange the free glorious air of Heaven for the dusty, noisy, crowded thoroughfare, say of Wall-street, Pearl-street, or the Bowery? Whence comes the passion for cities, and of herding together? Whence that madness that makes the workingman cherish the cellar or the garret, for himself and his children, when he can live better and wealthier even on the borders of the wilderness, with sky enough over his head, earth enough under his feet,—with the green grass to trample over, and the proud trees for a shade?

There is a belief in our country,—it exists no where else,—that agriculture is a vulgar occupation, demanding no taste, no genius, and nothing but the turning of the sod, and the levelling of the trees. How false is this. Why, the Vatican, in its way, is not more beautiful,—with the choice works of ancient and modern art in it,—a Belvidere Apollo here, and a Raphael fresco there,—than an English park in *its* way,—where a landscape is *worked out* as a picture has been,—a tree shaped to fit this view, and a hedge designed to aid that,—now perhaps a fountain, or a waterfall, anon a herd of deer,—it may be a hill created by industry, or a little river, with the gods and goddesses presiding over, fitted to run in the line that beauty is demanding,—and all harmonizing with Nature, as taste and genius and science have aided in adorning it. Even the cottage of the laboring Englishman—with his front door so neat,—the roses, and ivy and woodbine creeping over and adorning it, and the well-trimmed hedge in its front, is a jewel upon the face of the earth, and taste has made it so, for Nature has done but little for her father-land. The idea then is preposterous, that the highest effort cannot as well be expended in adorning the surface of the earth, as in chisseling out the rough block of marble, or in putting colors on the canvas to speak. All art is but subsidary to agriculture. The Vatican, and the galleries of the Roman capital, and of Naples and Florence, have been made up from the Roman villas,—from the ruins of the Tevoli of Adrian—the Tusculum of Cicero, or the gardens of Sallust.

We know not why it is, but so it is, there is in the northern States a most unconquerable aversion to agriculture, and the consequence is, with New-England in particular, that a farming people are fed from abroad, by the agriculture of other States, or of foreign nations. The multitude seem more to love the throng—the city,—the tinkling of money in the shop of the broker, or the rustle of silk and calico in the shop of the dealer, than the notes of the sweet songster of the woods, the rich beauty of the trees, or the inviting verdure of spring and summer. One reason is, that we have no farmers, such as the farmers of England, of Holland, or of Lombardy, who embellish Nature, and make their homes more delightful than the loftiest palaces of the town. Our men of wealth in the country, who have sons to educate, prefer to manufacture them into third-rate lawyers, fourth-rate parsons, and sixth-rate doctors, rather than to bring them up in the way that should teach them to raise a double crop from the same acre of land, or to introduce some new product, which should double the available means they now have.

As a farming people, the means of creating wealth from landed estates are not yet half developed. There is no reason on earth why this should not be a vine growing country, and yet it is not! There is no reason why the Old World should find us in silks, and yet it does. So varied is our soil, our climate, and so extended our line of latitude, from the rocky and frozen regions of the river St. John, to the sandy Sabine, that we have all the capacities for doing every thing for ourselves; and yet at this moment, we are oppressed, and overburthened with a prodigious foreign debt. The cotton planters make money. Why may not the hemp growers? The sugar planters make money; and why not the stock growers of even the Green Mountains? *Science* is what is wanted first, and then art and taste will come as handmaids. Educate then your boys in college, if you choose—a good education hurts no man—but make Farmers of them afterwards, if you wish them to be happy and wealthy.

Wall street is a big-sounding place in the history of our time now. We live there some twenty hours in a day, and therefore know something about it. When the Wall street Banks suspend specie payment, the whole Union follow the example. When the Wall street Banks expand, the hearts of the people are made glad. Wall street is the money throne of the United States of America Its bankers are the money princes of the day. States of the Union have their destinies settled there—and Wall street tells them whether they shall have railroads or not, canals or not, money or not; for the Rothchilds of Wall-street make and unmake empires here at will. But Wall street, the Thread Needle street of the New World, is a vile place at best. The street is so dusty, and dirty, so filled up with old bricks, and stones, that respiration even is difficult in it; and a lusty old tree, which has long felt that it was not at home in such a street as this, is sickening and dying away daily in this busy thorough-fare of man. When the clerks within it go home, many of them lie down in boarding houses in rooms no bigger than the coffins of the ancients, and when the money makers of the day reach their families, they are harrassed and agitated by excitement, trembling lest a packet ship should bring them the news of the shipwreck of their fortunes, or some convulsion blast all their hopes. Now in what is this Wall street to be compared with some beautiful river or lake of the country. Not twenty of these men of wealth have a garden as large as the pea-patch of the Farmer. Not one of them who, on a warm summer day, does not envy the Farmer, who has his green grass, his garden, his trees to look at, and above all, his pure air to breathe, and his pure water to drink.

The true art of living is the Roman life, or the life of the English of the present day,—the mingling of the country and the town,—the country for summer, and the city for winter,—with its books, its libraries, its excitement, and the collision of mind with mind. Say not the farmer cannot afford a residence in the city in the winter, for with economy he can. He needs no big palace for himself and family there; let him live as the French do in Paris—in some one story of some large house, with a kitchen and all its appurtenances,—and not in a princely habitation. Economy, a judicious expenditure of money,—prudence and skill will make a little go far. That wealth is the great object of life, particularly in a country where "wealth is" no "sign of merit," is one of the most delusive and ruinous ideas of the day. All of *matter* that we can gather together, it has been well said, will but give us our bread and clothes,—but there is a double means of living upon the resources of man's own mind, upon taste, upon science and the arts, —when books answer for companions, and when with them, a man can throw himself into every country and every circle of the

habitable globe,—now in the saloons of the European prince, now with the Arab in the desert, and anon with the Indian in his wilderness,—reading instruction in every spear of grass he walks over,—every stone his foot-fall strikes,—in every star above him, and the whole atmosphere, in and around him. To live, and *how* to live, *what* is living are topics we should like to discuss, if we can ever find room and time.

"NOTHING IS BENEATH THE ATTENTION OF A GREAT MAN."

This short sentence is inscribed over the door of the small building in Holland, which was once the workshop of Peter the Great; and furnishes more than volumes of common description and history could do, an insight into the character of the man who raised the Muscovites from the deepest barbarism to the rank of civilization, and laid the foundation of an empire, the extent of which the world seems as yet little able to comprehend

One of the most fatal errors to which men are subject is the disposition to treat small things with contemptuous indifference; forgetting that great things are but an aggregate of small ones, and that discoveries and events of the greatest importance to the world, can be traced to things most insignificant in themselves. Nothing more truly marks an original mind, and stamps its possessor as a truly great man, than the seizure of circumstances which would pass unnoticed by the great multitude, and by subjecting them to the powerful analysis of his reasoning powers, deducing inferences of the greatest practical results.

The power of the loadstone to attract iron, has been known from time immemorial; accident discovered the fact that a magnetized needle would indicate the north; but for a long time this truth was productive of no results. In the hands of Flavia Gioja of Amalfi, it produced the mariner's compass, an instrument which has changed the whole course of commerce, and opened America and Australia to the rest of the world. To mention only one of the things that the use of the compass in maritime discovery had led to—it has given the potato to Europe, and thus trebled the means of subsistence as well as doubled the population.

We owe the Galvanic or Voltaic battery, one of the most powerful instruments in advancing science the world has yet seen, to Madame Galvani's noticing the contraction of the muscles of a skinned frog accidentally touched by a person on whom her husband was at the moment making some experiments in electricity The experiments of Galvani and Volta were followed up by Davy, Hare and Silliman, and effects which have astonished and instructed the world, have been the result. The dry galvanic pile in the hands of the discoverer, De Luc, was nothing more than a scientific plaything. Singer of London, a mechanic of genius, saw the pile, and applied the power thus generated to move the machinery of a watch; and one constructed by him has now run more than 16 years without winding or loss of motion.

A chemist was at work in his laboratory preparing a powder for a certain purpose. A spark fell into this composition and it exploded; and from that day gunpowder was discovered. Some may question the utility of this discovery, but we do not. Gunpowder has materially aided the miner, the founder and the chemist; but more than all, it has given internal order and tranquility to the kingdoms of Europe, by knocking down those strong holds of feudal barbarism and cruelty, the castles of a haughty and domineering nobility, and placing the weak, so far as regards protection by law, and security to person and property, on a level with the highest.

A German peasant carved letters on the back of the beech tree, and with them stamped characters on paper for the amusement of his children. Nothing more was thought of them; but from them Faust conceived and executed moveable type; and printing, an art that perhaps has exercised a greater influence on the destiny of mankind than any other, thus had a beginning.

Galileo was in a church at Florence, where a drowsy Dominican was holding forth on the merits of the Virgin, and the miracles of the Holy Church; things about which the philosopher cared very little. The principal lamp of the church had been left suspended in such a manner that it swung to and fro in the slightest breath and caught the eye of the philsopher. The regularity of its oscillations struck him, and the idea of employing such vibrations to measure time occufred. Galileo left the church and returned to his study, and in a short time the first pendulum ever made was swinging.

Some children playing with glasses of a Dutch spectacle maker, accidentally placed two so that the steeple of a church appeared much nearer and turned bottom upwards From this small beginning was produced the telescope; an instrument which more than any other, has enlarged the boundaries of the universe, and given to man more exalted ideas of that Being who spake all these worlds into existence.

About one hundred and fifty years ago, an old man might have been seen in his study, apparently amusing himself by witnessing the escape of steam from an old wine bottle, and then checking it by instantaneously plunging it into the cold water. There are multitudes who would sneer at an observer of nature who could stoop to notice such a trifle; yet this expansion and condensation of steam in the wine bottle, and the train of thoughts which it suggested, in the hands of the Marquis of Worcester, gave birth to the steam engine, the most valuable present science has ever made to the arts. These very men who are now filled with delight and astonishment when they behold the beautiful steam boat majestically ploughing the waves, or the steam car whirling its train of carriages over the railroad with almost the rapidity of thought, would be the first to look and speak with contempt on the train of small causes that led to such important results.

But perhaps the example of Newton, more than any other, conclusively proves that there is in the whole circle of nature, nothing trifling to a great mind. Thousands had seen apples fall from the trees to the earth; yet no one had ever asked the question whether the cause that caused the apple to fall to the earth extended to the moon?—yet this question and its solution was the key that has unlocked the mechanism of the universe, and given to man powers and ideas, which could otherwise never have existed.

The great truth these examples inculcate is this—that there is nothing trifling in nature, nothing that is not worthy of attention and reflection, nothing that does not form part of the great chain of cause and effect, and consequently capable of leading to the most valuable and interesting events. There is a feeling abroad, that it forms no part of the business of the tiller of the soil to think. This is not true, and the position should be exploded at once. It is scarcely possible for a man to be more favorably situated for an observation of nature than the farmer. His business is with the soil he treads upon, with its various constituents and their ever varying proportions—with the green earth and its covering of grapes and plants, its flowers, while over the head is stretched the broad o'erarching sky, inviting him to useful reflection, and urging him to "look through nature up to nature's God."—[Genesee Far.]

Agriculture, &c.

TROPICAL FIBROUS PLANTS.

It is with pleasure we lay before the readers of the New-York Farmer the following communication from Dr. Perrine, late U. S. Consul at Campeche. His long silence made us apprehensive that he might have fallen a victim to his zealous and continued efforts to introduce into this country the fibrous and unestimated plants of southern Mexico. His devotion and sacrifices appear to throw around the object he has in view a sacredness that renders further "neglect and delay" unhallowed. We hope and trust, that ere long his anticipations will be fully realized, as they long since deserved.

Dr. Perrine's object is to acclimate in Florida the fibrous plants of southern Mexico. These plants produce materials for ropes and cordage; but from the miserable culture and rude manufacture in that country, Dr. P. has been led to infer a vast source of national wealth, if introduced into the southern section of the Union. He accordingly has had the subject brought before Congress several times; but the momentous concerns of party politics have been too engrossing for him to obtain any positive action. State Legislators, and Agricultural and other associations, in various parts

of the country, have strongly recommended the undertaking. Dr. P. has devoted money, and much of his time, and made sacrifices of health, in procuring plants and specimens of the hemp, and in distributing them in various parts of the country. For acclimating the valuable plants of the globe in our extended country, it has been suggested that there should be three national gardens,—one in the Northern, one in the Middle, and one in the most Southern States. To aid in the establishment of a national experimental garden in Florida has been Dr. P.'s request of the General Government. A grant of a tract of the unoccupied, and almost valueless, portion of Florida, the assistance of a Government vessel in importing the plants; and an appropriation of a small amount of money, would accomplish the object, and add vastly to individual and national prosperity; and it is to be hoped that Congress will at its ensuing session give this subject that attention to which it is so eminently entitled.

We shall, at all times, be ready to aid Dr Perrine, and others who may take an interest in the subject, through the columns of our publications, or by any other means in our power.

To the Editor of the New-York Farmer.

Model Farm of the Agricultural So. of La., Parish of St. James, about 60 miles above New-Orleans, 13th April 1837, 8 o'clock, P. M.

DEAR SIR :—After ten days confinement to bed by a fresh attack of my ancient disease of the liver, I have this moment risen to attempt a communication to you. After waiting at Campeche in vain the arrival of my successor in office, during eighteen months, sustained by the lingering hope that one of our naval vessels would call to receive and transport to Florida a cargo of at least the fibrous leaved plants of Yucatan, I became convinced that our government would not aid, either my arduous endeavors to promote the utility of American Consulates in Mexico, or my still more persevering exertions to acclimate tropical plants in the United States. Hence, on the 28th of January I embarked in the schr. Pocahontas, *with the Archives of the Consulate*; on the 8th of February the schr. struck and stuck on a mud bank, off the S. W. Pass of the Mississipi; and on the 11th I alone arrived at New-Orleans. During the ensuing month it rained more than half the time, day and night, and the streets were literally miry with mud, yet so rapid was the evaporation in the intervals that two to three or four sunny days at fartherest sufficed to fill the air with dust.

My health was so bad on my departure from Campeche that the master of the vessel expressed to the owner his apprehensions that I would not live to reach New-Orleans, and the bad weather of New-Orleans was certainly not calculated to improve my condition; yet such was the magical effect of breathing once more the air of "freedom only home," that within the month my weight considerably increased, and my appearance was so much bettered as to excite the remarks of my friends. During this period there were two meetings of the Agricultual Society, at which I assisted, and exhibited specimens of the plants and products of Yucatan. The results were highly satisfactory to me. Two resolutions introduced by the worthy President, Ex-Governor Roman, were unanimously passed, one requesting the publication of my correspondence and the other my agency in obtaining plants at the expense of the Society. Several members of the Society were also members of the Legislature, and one of them Dr. Brashear, I believe, on the 11th February, introduced a resolution in my favor which was unanimously passed by both houses of the Legislature. This resolution with an explanatory preface, instructs the Senators and requests the Representatives of La. in Congress "to procure the passage of said Bill into a law under such conditions as may comport with the public good." I cannot conceive what possible opposition can be made to the law, especially since Gen. Scott has officially declared that the granting of Florida lands to volunteers would be a *fraud*. Indeed I have never anticipated any rational objections to the Bill; but what I have suffered by so long, and what I still fear, is *neglect* and *delay*. There is not probably another man in the United States who would accept the land as a gift, if he were obliged to occupy it, particularly after the unfavorable impressions of soil and climate created by the late Seminole war; but I still persist in my opinion that the tropical temperature of the Southern district of Florida will counterbalance the defects of its surface: and if the facts and arguments I can offer, with a township of miry marshes and arid sands, will not suffice to attract associates and capital, to plant and populate it, why I shall continue on hereafter, as I have gone on ten years heretofore, *unaided and alone*, as I am determined to locate my family there for life.

14th—11 A. M. The exertion of writing the foregoing, cost me a bad night and morning, yet it is so painful to be lying in bed, preyed upon by pestering thoughts, that I have got up again to continue this letter. It was agreed that I should proceed to this Farm, to ascertain the condition of the tropical plants, which I had sent to the Agricultural Society during the last four years; and on the 19th March I left New-Orleans and arrived here the same night. I found in the *List* signed by the manager, C. Dumont, last fall, the following *names*. Hæmatoxylon Campechanum 2 plants, Piscidia Erythrina, 5 plants, Crescentia cujete, 1, C. pepino 1, Melia sempervirens, several (plusieurs) Ficus indica, 4, Agaves 9, Bromelia ananas, 2, B. karatta, 2. I went into the garden and found a frame shed about 12 feet broad, 15 feet long, and 7 feet high on one side, and nine on the other. A single layer of thin cypress boards constitues the weather boarding and roofing. On the south side there are three rows of small window glass extending the whole length, and on the west side a similar arrangement about half the breadth not exceeding the surface of a common window. You may infer from this description how little protection from cold could be afforded to plants during the excessively cold days and nights which visit Louisiana every winter. Indeed, it has become here a general opinion that both the winter and summer of this State have been gradually getting colder during many years. Notwithstanding all these discouraging circumstances, I found that all the woody plants had continued to increase in height and diameter during two or three years. The Logwood, the Habi, (P. E. Campeche Teak) the 2 species of Calabash tree (C c and p.) had grown to a very encouraging degree, but imagine my regret when I found that the branches and trunks of each were now dead! These had all been left in shallow boxes of earth, had outgrown the capacity for nourishing them, and this fact alone would account for their perishing independently of other neglect, or of cold. It nevertheless appears that the *roots* are still alive, and that if proper care be taken of them, their acclimation will be ensured.

The Ficus indica planted on the border of the central path of the garden is also killed in the trunk, and has been cut off at the level of the ground. The roots however appear to be vigorous, and will hereafter bear so great a proportion to the stems as to sustain the heat and life of the latter. Plants like human beings must pay the price of acclamation. They must suffer from sickness during their seasoning to maintain their health afterwards in their new residence. Many *individuals*, both of the vegetable and animal race, must even die during the process of acclamation in their adopted or adoptive country, but the *species* of both will be preserved. But the Meliasempervisens has exceeded my expectations. Although the seeds had been planted very close in a shallow box at least 50 within 25 square inches, so that they sprung up as thick as wheat, the height of 18 to 30 inches, and had been left in the open air all winter entirely neglected, yet the stems on my arrival, the 20th of March, were

already putting out leaves! I insisted in having them immediately transplanted to the border along the fence of the garden; without my knowledge half their lengths were chopped off; three weeks of dry weather succeeded, and yet they did not loose a single leaf! It has now been raining the greater part of the last four days and nights, and at this moment I went to the garden and ascertained that not a single plant has been damaged in any way. I doubt not that it will soon overrun all our South-western and Southern States like its brother the Pride of China, (M. Azedarach) under its Campeche name of *Paraiso* or Paradise tree. As this is the only one of the aforesaid tropical trees which has been here produced from the seed, does it not afford encouragement to believe that such of the others as can be propagated by seed might have succeeded as well. I brought with me a considerable quantity of the seeds of the Meliasempervisens, and have distributed many in New-Orleans, and to planters up the river, and confidently anticipate its extensive propagation.

But how unfortunate it is for the first propagators of plants, that various very valuable species cannot be reproduced by seeds. He only who like myself, has been many years endeavoring to transport, transplant, and transacclimate living plants, can form an adequate conception of the difficulties and disappointments which lie in his way. Although the Fecus indica appears to be disseminated by birds, yet I have not ascertained that man has been able to reproduce it from the minute seeds of its minute fruit. The Crescentia eugete, or Calabash tree has seeds enough in the pulp of the shell, so useful for domestic utensils, yet it is always propagated in Yucatan, by shoots from its roots. Even admitting that when these trees get acclimated in a civilized country, the propagation by seed can be affected; very few persons would have patience enough, to wait so long as would be required in that way to re-produce their useful trees. It is hence, especially important, to select the best possible location for living plants, imported from tropical climates. That the damage done to the Logwood, and the Campechy Teak,* and the wild Fig, and the Calabash tree, does not discourage me, results from the fact, that these living plants sent from Campeachy, have in the model farm a bad location, both as regards exposure and soil.

This Logwood is a *Swamptree*, and should have been planted here in the cypress swamps. The Habi,* is a native of arid sandy and limestone soils, and should have been planted in the Pine woods. Both being forest trees, should have the protection of forests at least, during the process of their acclimation. The wild Fig appears to delight in the most sterile soils, and will flourish in the crevices of barren rocks. Indeed it will take root in the cracks of stone walls and fences, and its swelling roots, will at the same time, force apart and fasten portions of the stony mass in which they grow. In the suburbs of Campeche, the lots are surrounded by walls which are made rather of mortar and stone, than of stone and mortar, but the latter is so excellent, that it becomes as hard as the lime stones themselves, which are laid on it. It is hence of course easy to form pillars and columns resembling solid pieces of stone or marble. On one side of a gate way, there was a stout square pillar, on the top of which was a pyramidal head with a groove at the base. In this groove a young wild fig was growing, and its roots had removed the pyramidal summit at least a foot beyond the centre of gravity of its base! and there they held it fast and firm!! and thus it has remained several years!!! Sometimes I have seen it growing out of the top of a palm tree! and at others I have seen the top of a palm tree *apparently* growing out of a wild fig tree!! The explanation is easy. The minature fruit, about the size of a raspberry, is voided by the birds on wall on other trees, and there adheres and grows, extracting mostly its nutriment from the air. When germinated on the top of a palm tree, it sends down aerial roots, which twine round the trunk of the palm as they gradually descend to the ground, so as to cover finally the whole trunk, and appear to convert it into a wild fig tree! When growing by itself after it has reached so great a size that its branches are disproportionately large to its roots, it sends down aerial roots from the lower sides of its heaviest branches in a direct line to the earth. This process being repeated, and these downward shoots being rooted, they both serve as props to support the tree against the unruly winds, and as pumps to suck up nourishment from the unwilling earth. In the course of ages it thus becomes a forest; and such is the history of the celebrated Banyan tree of the East Indies. But I am running away from my principal subject, and my sickness must plead my excuse for my desultory style. At all events, you will perceive that the wet muddy soil of the banks of the Mississippi is not naturally adopted to the growth of the Fecus indica, and much less to its acclimation.

From what I have written you will perceive that I am decidedly of opinion that the pinewoods of Louisiana are decidely superior to its river banks for the acclimation of tropical plants. Indeed I may declare that as the intermediate domestication of tropical plants is essential to promote the gradual acclimation of tropical plants in all the S. sand. S. W. States, so in these states, the intermediate transplantation of tropical plants in their pinewoods, is highly important to promote their success in the other sections of the same states.

The very important fact should also be always kept in mind, that independently of the protection of the evergreen woods, nearly all valuable plants of the tropics, yet to be introduced, *demand the most sterile soil.* Mr. McCarty of New-Orleans, showed me a plant in his garden, which he had brought from the pinewoods, where it grows rapidly into a beautiful tree, but which remained in a stunted state, under his fostering care. He attributed its failure to the wetness and coldness of the soil alone, but I would add to its excessive richness, because you know that all the alluvial banks of the Mississippi are loadedwith vegetable and animal remains The soil on the banks is of course exceedingly fertile for such marsh plants as delight in decomposing, or organized matter, and hence the Sugar Cane could not find a better soil, but even for this the subsoil is too much charged with water. You know of course that the dead are buried above the earth, on account of the fresh water below it which is spread all over a vast extent of the State like an underground sea. As the process of living vegetation is never suspended in evergreens, its activity in every season, generates a notable degree of heat by means of which they elevate the temperature of the freezing winds, whose force they, at the same time, mechanically arrest and thus afford a double protection to the other plants which seek their shelter.

When I began, I did not expect to write three pages, and yet I find myself in the middle of the fourth page, without having said a word on my most favorite topic—*fibrous leaved plants.*

To be Continued.

LIMESTONE, *Ground* but *not burned* for agricultural purposes. The following paper, on the use of *Lime Stone, ground* instead of *burned*, for agricultural purposes, was read before the Lyceum of Natural History of New-York, by Wm. Partridge,

*By the by, when I use the term Campeachy Teak, I don't mean to express that it is a species of the Tectona, but adopt the language of the sailors, who thereby convey the idea that it is an equivalent of the Teak-wood, of the East Indies, and much superior in durability, even to our live oak. In Jamacia it is said to be called Jamacia *logwood*, a still more unappropriate name.

* The Campeachy name of the Piseidia erythrina, or rather Pampeacheana, and which I shall use hereafter instead of Campeachy Teak.

Esq. The facts therein set forth, are highly important, and are worthy of being tested by those who have limestone on their farms. We ask for this subject, the attention of our readers; and of those who have heretofore tested, or may hereafter test, the theory by experiment, to furnish us a statement of the result for publication. We shall also be much obliged to Mr. Partridge for a continuation of his favors.

TO THE PRESIDENT OF THE LYCEUM OF NATURAL HISTORY.

SIR,—In a conversation I had with you on board a steamboat on the North river, sometime during the summer of 1835, relative to lime, as applied agriculturally, I mentioned the advantage of using it generally in a ground state, as plaister is now used, instead of burning it. You informed me, subsequently, that your farmer had applied some on your land in a state of powder, and found it decidedly beneficial. I then promised to send you my written opinion on the subject, and I now beg leave to fulfil that promise, with an apology for delaying it so many months.

It is well known, to every intelligent agriculturalist, that soils covering limestone rocks are the most productive of any on the globe. I know of but one exception, when thelime stone is too highly charged with magnesian earth. Our country affords many facts in proof of this assertion. I shall refer to two locations as all sufficient for my purpose. The state of Kentucky has a bed of lime stone running underneath its whole surface, and its natural soil has been produced, and is still producing by the abrasion of those rocks. The superior productive powers of the soil of that State is well known to every intelligent farmer in our extensive country, and is spoken of in terms of admiration by Europeans. That part of Pennsylvania extending from the Lehigh Water Gap to Easton, is a limestone country, and affords another instance of its highly productive powers.

In England, the soil deposited in valleys at the foot of limestone hills, are equally productive. The valley running from the city of Bristol, to the city of Worcester, is of this description, and there is no soil more productive in Great Britain. There are more than twenty spurs of hills bounding that valley, each containing large bodies of limestone rock, and the springs flowing from them, are so charged with limestone, as to incrust every thing lying in them. When the springs issue from the rocks high up the hills, they are much used for irrigating the higher lands, and the beneficial effects are visible to every observer.

Lime, in the state of Chalk, is also used very generally on land near to the Chalk Mountains in England.

The lower part of this State abounds in primitive limestone, and the preceding observations were made with a view to apply the facts to rectify a material error committed, as I conceive, by the farmers in using it on their land. They burn the limestone at considerable expense, and in that state use it for agricultural purposes. I would suggest, as a far better general application, that the limestone be merely ground, and in that state applied to the land. As this may be a new mode of application, I shall endeavor to show wherein it is preferable to the present.

I have been frequently informed by farmers who use burnt lime on their land, that they keep it some months before using, and that then the good effects are not observable the first year. We have only to ascertain what these facts prove, and the whole mystery will be instantly solved. In burning limestone two materials essential to agricultural productiveness are driven off, its water and its carbonic gas. In its natural state it is a carbonated hydrate, when burnt it is caustic lime (oxide of calcium,) made so by the heat driving off its water and carbonic gas. Why does the farmer delay putting it on his land, but for the simple reason that it is too caustic for vegetation. Why does it require to lie in the soil one year before producing any visible fertilizing effect? it is for nothing more than to give it time to return again to a state of carbonated hydrate, the same condition it was in before burning.

I have said that limestone merely ground is the best general mode of applying it to agricultural purposes, there are some exceptions to this rule. When a soil contains "hard roots, dry fibres, or other inert vegetable matter, a strong decomposing action will take place between burnt lime, and the vegetable matter, rendering that which was before comparatively inert, nutrative." Where this is the case, it would be well for the farmer to use one third burnt lime, and two thirds of ground limestone, or any other proportion he may find most efficacious. For stiff heavy soils use the limestone coarsely powdered, for in this state, after being well ploughed and harrowed, so as to mix thoroughly with the soil, it would so lighten it as to enable the sun and air to penetrate to the roots of its vegetation, thereby rendering the future crops more productive. For lighter soils it cannot be ground too fine. Our primitive limestone rocks are peculiarly well calculated for this purpose, as the particles are held together by a loose aggregation, and therefore easily reduced to small pieces, or to a fine powder, at the option of the operator.

The question was asked, by a writer in a late New-York Farmer, "if it be possible that ground limestone can answer the purpose of plaister of Paris." I should say that it can, and it may be, eventually, a better purpose. The fertilizing property of plaister depends mainly, if not altogether on its hydratic property, that is, on its power to attract moisture during the night, and imparting it gradually to the plants during the day. The carbonate of lime possesses the same property in a considerable degree. I have never heard of these two limestones being analized, for the purpose of developing their comparative powers of absorbing moisture from the atmosphere, and their facilities of giving out their moisture at atmospheric temperatures. To have this accurately performed, would be a desideratum with agriculturalists.

We know that soils formed by the abrasion of limestone rocks are of the most fruitful description, we see its productive powers when land is irrigated with water holding limestone in solution, and with equal effect in the state of Chalk. Science has developed the properties on which this productiveness depend, and if our farmers would suit their appliances scientifically, we should not now be receiving a supply of agricultural products from Europe.

WILLIAM PARTRIDGE.

SHORT HORNED DURHAM BULL "ESSEX."

We saw on Saturday last, the fine Durham Bull Essex, raised by Gorham Parsons, Esq., of Brighton, Massachusetts, but now the property of Col. Ralph Watson, of East Windsor, Connecticut.

The following is a description of him with his pedigree.

The thorough bred Durham improved short horn BULL, by sire and dam is from the most celebrated stock ever imported from England—was bred with great care by Gorham Parsons, Esq., of Brighton, Mass. He is a beautiful red roan, and red and white speckled, red neck, white face, upright short and small horns, red and white mottled legs, white throat, red hams, fine straight legs, fine bone, and altogether a very superior animal, was dropped in Byfield, on Fatherland farm, May 10th, 1833, and weighed May 11th, 1837, in ordinary flesh, 1578 lbs. His form, muscle, bone, &c., are such as Farmers, Darymen and Butchers admire and consider essential to make a perfect and profitable animal.

PEDIGREE.

Essex was got by Young Admiral from

old Violet, old Violet was from the imported cow Bountiful, that took the first premium of 75 dollars at the Cattle Show in Brighton, in 1817, her sire Cornelius Coolage of Boston celebrated Bull Celebs, which he imported from England to improve the stock of cattle in the county of Essex, Young Admiral was got by Admiral, a fine bull sent from England to Mass. by Admiral Coffin, to improve the breed of cattle in his native State, Young Admirals dam was the fine full blood Durham Cow Rose.

RALPH WATSON

East Windsor, Conn. May 22d, 1837.

POTATOES.—In Prussia the Potatoe is cultivated with peculiar success;—as the stalk grows, the earth is heaped up, leaving only three leaves at the top; roots are thus greatly increased, and the produce is said to be astonishing.

From the Maine Farmer.

VALUABLE IMPROVEMENT.

PITTS' GRAIN SEPARATOR AND CLEANSER.

Every thing which shall facilitate the labor of the Farmer and enable him to do more at a less expense, we look upon as a valuable improvement, and never refrain from giving as early notice of it to our readers as possible, that they may put themselves in a way to profit by it, or at any rate, not remain in ignorance of it.

In accordance with this practice we would ask the attention of our readers to the communication below, respecting a machine, invented by the Messrs. Pitts', of Winthrop, for threshing, separating the grain from the straw and foul stuff, and winnowing it in a most clean and perfect manner.

The Inventors are favorably known to the public by several important improvements which they have made in machinery of different kinds. It will be recollected that a premium has been awarded them by the Kennebec Agricultural Society for their machine for threshing and cleansing grain. Since then they have been busily engaged in improving and perfecting their invention, until at length they have produced one which we think is all that can be asked for. The machine is made up of the thresher, which is of the usual form,—a belt so constructed as to separate the grain from the straw, and to pass the straw forward and throw it off of the machine,—a winnower or fanner, with its sieves of different degrees of fineness to separate foul seeds from the wheat,—a reservoir for the cleaned grain, and another for the light stuff or tailings. An apparatus is attached if desired, for returning the last the winnower again for a second cleansing. The fan is so constructed that the wind may be regulated so as to give any quantity, from a *zephyr* to a *tornado*. The machine is simple in its construction, and occupies a space about eight feet long, three and a half high and two wide, and the expense is probably from sixty to seventy-five dollars according to the style and finish.—This includes the threshing machine.

Having seen the machine in operation, and examined every part of it; and having critically watched every movement with a view to detect any faults which might render it unavailable, we are constrained to say that we could find nothing which could lead us to doubt its utility, and we therefore embrace the opportunity to advise our friends of the facts, in order that they may be aware of the existence of so important an auxiliary in the wheat business and govern themselves accordingly.

This machine will be exceedingly well adapted to the practice of the Southern and Western States where they are in the habit of threshing grain in the open air, and as it can be done without the loss of a kernel.

IMPORTANT IMPROVEMENT IN THRESHING AND CLEANSING GRAIN.

An improvement in the mode of threshing and cleansing Grain has been effected by Messsrs. J. A. & H. A. Pitts, of Winthrop, Maine, which we think exceeds any thing that we have heretofore seen or heard of.—The improvement consists in adding apparatus of a simple kind to the common threshing machine whereby the straw is separated from the grain and the grain winnowed from the chaff and foul seeds in a complete and expeditious manner, all by one operation of the machine. We had the pleasure of witnessing the operation of this machine on the 8th. It was propelled by one horse.

The Grain was threshed perfectly clean, and winnowed or cleaned far better than we have ever seen it by any common hand winnowing machine. No grain was found passing over with the straw, or scattered out from any part where it should not. We congratulate the Agricultural commmunity in having the prospect of so efficient an aid to the wheat or grain culture, and cheerfully recommend it to the attention of the farmers of the United States as a valuable improvement.

PELEG BENSON, Jr.	BENJAMIN STEVENS,
SAM'L BENJAMIN,	M. B. SEARS,
PELEG BARKER,	A. S. RICHMOND,
DANIEL CARR,	WM. HENRY LORD,
DAVID STANLEY,	SAM'L. WOOD, JR.
G. A. BENSON,	JOS. A. MELCALF.

The following remarks we copy from the Augusta Banner. It seems that we are not alone in the opinions which we have expressed in regard to the Messrs. Pitts' Separator.

THESHING, SEPARATING AND WINNOWING MACHINE.—I was very much gratified while at Winthrop, in beholding the operation of a Machine bearing the above title. It is the invention of the Messrs. PITTS' of Winthrop, who are the Patentees. These gentlemen are well known as the inventors of several instruments, one of which is the *Stone Cutter*, which bids fair to be of much advantage in hewing stone. The Threshing, Separating and Winnowing Machine will probably be of as much real utility as any of their inventions. As yet, it has not been introduced finally to the public, but must claim the approbation of popular opinion. It performs with the utmost ease what by many has been considered an impossibility, completing effectually the different operations of threshing out the grain, seperating it from the straw, and winnowing it from the chaff. As such it is at once perceived, that it will not only be highly useful, but must be exceedingly valuable to farmers. Its intrinsic excellencies are its perfect simplicity, its great power, the great quantity of labor it performs in a limited period of time, and the velocity and thoroughness with which it prepares the grain for the operation of the mill. It combines every desirable principle for the purposes for which it is designed and commends itself at once to the notice of grain growers. It can be moved either by horse power, water power or steam power. Further particulars will readily be furnished on application to Capt. John A. Pitts, Winthrop, Maine.

D. J. M.

THE CROPS IN INDIANA.—The following extract is from the Madison (Indiana) Courier & Enquirer of 6th May, a well conducted journal, of which we have No. 6.—We welcome it to our table, and wish its publishers all success.

Since our last went to press, we have conversed with several farmers, who inform us that the wheat crops, although at present suffering for want of rain, look better than they did this time last year, and that unless injured in its growth by a continuance of the present unfavorable weather, promise a fair yield. The present prospect for oats is rather unfavorable. Although the ground generally has for some time been prepared, but few farmers have ventured to plant corn, and those few, it is conjectured, will be compelled to re-plant, the seed having rotted in the ground. It is high time this invaluable grain was in the ground, and we sincerely hope that we may soon have sufficient rain to prepare the earth to receive it.

Vegetables of every kind are exceedingly backward, owing to the same cause.—This however, is no news to our market-going friends.

There is at present every prospect of an abundance of fruit of every kind. The dry weather has been rather favorable to them than otherwise. A few of the peaches have been destroyed, but more than a sufficient quantity still remain.

We had scarcely finished writing the above paragraph late last evening, when we were blessed with a refreshing shower.

From the Farmer and Gardener.

CULTURE OF RUTA BAGA.

Mr. James M. Lawton, in a communication in the Cultivator, gives the following rules for the preparation of the soil, and the culture of the Ruta Baga. The conclusions at which he arrives are the result of many years experience and close observation.

1. The land, he says properly adapted to the nature of the plant, is a strong loam.

2. The land should be ploughed early in the spring, in order that the sward, if it have one, may rot by the 10th of June.

3. The land should be made perfectly mellow and smooth, and a good coat of

manure, that is fine, say sheep or barn manure should be put on.

4. Throw the land into ridges 24 inches apart, with a small horse plough.

5. Roll down the ridges by a light roller, or other instrument; make a light furrow, say an inch deep, drill in the seed on or about the 15th of June: the seed should be 10 inches apart in the drill, and when the plants come up, all but one plant should be pulled up.

6. Dress the plants three times in a season, that is, keep the weeds out, and the earth stirred about the plants; as they are first breaking the ground they must be powdered with plaster of Paris,—and twice afterwards also—when they receive the two last hoeings.

Mr. Lawton further adds, that he has found the above rules, when closely followed, never to fail in producing a good crop; that last year he raised from 90 rods, that is from half an acre and 10 perches of land, 605 bushels of sound, close-grained Ruta baga turnips, on land a distance from the house and barn, on which, never to his knowledge, a spoonful of manure had been placed until within a few days of the time he put the seed in the ground. This product was equal to 1075½ bushels per acre. The success of Mr. Lawton should surely serve to stimulate every farmer and planter to at least appropriate an acre or two to the culture of this excellent and hardy root. Unlike the other members of the turnip family, it preserve through the hardest winter in the field, if the precaution be taken to throw a furrow up against the rows just as the hard frosts set in, and may be drawn thence for use, as occasion may suit. They are also more firm in meat, and more nutritious than any other turnip. Horses and cows fed upon them do not scour as when kept on the other varieties.

List of subscribers to the **Railroad Journal.** that have paid, (continued.)

J. M. Price, City, N. Y. Jan. 1, 1838
A. Brocklebank, City, Jan. 1, 1838
J. E. Thompson, Augusta, Geo. To Oct. 1, 1838, Instead Jan. 1, 1838
Geo. Gillingham, Baltimore, Md. Jan. 1, 1837
W. R. Cunningham, Greensboro, Geo. June 1, 1837
J. Myers, Attleboro, Mass. June 1, 1838
Capt. W. Turnbull, Washington, D. C. Jan. 1, 1838
T. W. Smith, Georgetown, D.C. Jan. 1, 1838
Benj. Hallowell, Georgetown, D. C. Jan. 1838
Holt Wilson, Portsmouth, Va. Jan. 1, 1838
Ogden Mallory, Sandusky City, Ohio, Jan. 1, 1838
Giles C. Smith, Paolia, Inda. Jan. 1, 1838
J. Fraser, " " Jan. 1, 1838
Canal and Railroad Co. Charleston, S. C., Jan. 1, 1838
Wm. Henry, Stroudsburg, Pa. Jan. 1, 1838
Wm. Williams, Athens, Geo. Jan. 1, 1838
M. P. Henny, Philadelphia, Pa. Feb. 1, 1836.
Wm. Jerome, Kane P. O. Ill. May 1, 1838
Lt. A. G. Blanchard, Fort Jessup, La. July 1, 1838

MECHANICS' FAIR.

Notice to Mechanics, Artisans, Manufacturers, &c.—The undersigned give notice that the first Annual FAIR of the Massachusetts Charitable Mechanics' Association will be held in the city of Boston, in September next, commencing on Monday, the 18th, and continuing at least three days.

The Association have placed at the disposal of the Board of Managers, the sum of Five Thousand Dollars, to enable them to conduct the Fair upon a liberal scale; and they hope to be able to render satisfaction to all who may feel disposed to offer articles for exhibition.

Medals or Diplomas will be awarded to the owners of all articles that may be deemed worthy of such distinction; and the Managers intend that the strictest impartiality and fairness shall be observed in the distribution of Premiums.

The Managers, in furtherance of the subject they have in view, invite contributions, of articles from every department of industry; of choice specimens of American ingenuity and skill; rare and valuable domestic productions, natural or artificial; the delicate and beautiful handiwork of females; useful labor-saving machines, implements of husbandry, and new models of machinery, in all their varieties.

Judges will be appointed to examine all articles offered, and the managers will award a gold or silver medal, or a diploma, to all articles that may be pronounced by the judges worthy of reward.

Articles intended for exhibition, must be delivered on or before Wednesday, September 13th.

Arrangements will be made to exhibit, *in operation*, any working models that may be offered, which will render the exhibition useful and interesting, and the managers respectfully invite contributions in this branch. A careful and competent superintendent will be appointed to take chare of all models sent for this purpose.

Board of Managers.

Stephen Fairbanks,	Jos. T. Buckingham,
John Rayner,	James Clark,
William Adams,	Henry W. Dutton,
Uriel Crocker,	George Darracott,
Gardner Greenleaf,	Wm. S. Pendleton,
James L. Homer,	Charles A. Wells,
James Barry,	Henry Bailey,
Joseph Tilden,	Jonas Chickering,
Ephraim Harrington,	Henry H. Barton,
Joseph Lewis,	Thomas Boyd,
Walter Frost,	Wm. Uunderwood,
Thomas J. Shelton,	George G. Smith,
John G. Rogers.	

P. S. For any further information address JAMES L. HOMER, Corresponding Secretary, Boston.

Boston, March 24, 1837. m28–ts1

DRAWING INSTRUMENTS.—E. & G. W. Blunt, 154 Water-street, New-York, have received, and offer for sale, Drawing Instruments of superior quality, English, French, and German Manufacture.

They have also on hand Levels of superior quality at low prices.

☞ Orders received at this office for the above Instruments.

AVERY'S ROTARY STEAM ENGINES—AGENCY.—The subscriber offers his services to gentlemen desirous of procuring Steam Engines for driving Saw-Mills, Grain-Mills, and other Manufactories of any kind.

Engines only will be furnished, or accompanied with *Boilers* and the necessary *Machinery* for putting them in operation, and an Engineer always sent to put them up.

Information will be given at all times to those who desire it, either by letter or by exhibiting the engines in operation in this city.

Inquiries by letter should be very explicit and the answers shall be equally so.

D. K. MINOR,
30 Wall-st., New York.

FOR SALE AT THIS OFFICE,

A Practical Treatise on Locomotive Engines, with Engravings, by the Chevalier De Pambour—150 pages large octavo—done up in paper covers so as to be sent by mail—Price $1 50. Postage for any distance *under* 100 miles, 40 cents, and 60 cts. for any distance exceeding 100 ms.

Also—*Van de Graaff on Railroad Curves*, done up as above, to be sent by mail—Price $1. Postage, 20 cents, or 30 cents, as above.

Also—Introduction to a view of the works of the *Thames Tunnel*—Price *fifty cents*. Postage as above, 8 cents, or 12 cts.

*** On the receipt of $3, a copy of each of the above works will be forwarded by mail to any part of the United States.

TRANSACTIONS OF THE INSTITUTION OF CIVIL ENGINEERS OF GREAT BRITAIN.

The first volume of this valuable work, has just made its appearance in this country. A few copies, say *twenty-five* or *thirty* only, have been sent out, and those have nearly or quite all been disposed of at *ten dollars* each—a price, although *not* the *value* of the work, yet one, which will prevent many of our young Engineers from possessing it. In order therefore, to place it within their reach, and at a convenient price, we shall *reprint* the entire work, with all its engravings, *neatly done* on wood, and issue in six *parts* or *numbers*, of about 48 pages each, which can be sent to any part of the United States by mail, as issued, or put up in a volume at the close.

The price will be to subscribers *three dollars*, or *five dollars* for two copies—*always in advance*. The first number will be ready for delivery early in April—Subscriptions are solicited.

NOTICE TO CARPENTERS.

A number of Carpenters are wanted to lay the superstructure of the Georgia Railroad, to whom liberal wages will be given.

The road traverses an elevated ridge which is entirely free from any local cause of sickness.

JOHN EDGAR THOMSON, Ch. Eng.
Engineers Office, May 22, 1837. 22–3t*
Augusta, Geo.

TO CONTRACTORS.

PROPOSALS will be received until Tuesday evening, the 27th June next, at the office of the Wrightsville, York and Gettysburgh Railroad, in York, for laying a single track of Rails on 12 miles of the above road, extending from Wrightsville to York.

☞ Plans and specifications of the work will be exhibited in the office after Monday, the 8th inst., and further information will be furnished by Mr. J. P. Houston, P. M., at York.

F. W. MIFFLIN, C. E.
May 8, 1837. 20–3t

TO CONTRACTORS.

JAMES RIVER AND KANAWHA CANAL.

THERE is still a large amount of mechanical work to let on the line of the James River and Kanawha Improvement, consisting of twenty locks, about one hundred culverts and several large aqueducts, which will be offered to responsible contractors at fair prices.

The locks and aqueducts are to be built of cut stone.

The work contracted for must be finished by the 1st day of July, 1838

Persons desirous of obtaining work are requested to apply at the office of the undersigned, in the city of Richmond, before the fifteenth of May, or between the fifth and the fifteenth of July.

CHARLES ELLET, Jr.
Chief Engineer Jas. Riv. & Ka. Co.

P. S.—The valley of James River above Richmond is healthy

16—10t

PATENT RAILROAD, SHIP AND BOAT SPIKES.

*** The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent,) are found superior to any ever offered in market.

Railroad Companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above named factory—for which purpose they are found invaluable, as their adhesion is more than double any common spikes made by the hammer.

*** All orders directed to the Agent, Troy, N. Y., will be punctually attended to.

HENRY BURDEN, Agent.

Troy, N. Y., July, 1831.

*** Spikes are kept for sale, at factory prices, by I. & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water street, New-York; A. M. Jones, Philadelphia; T. Janviere, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad Companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes. (1J23am) H. BURDEN.

TO RAILROAD CONTRACTORS.

SEALED proposals will be received at the office of the Selma and Tennessee River Railroad Company, in the town of Selma, Alabama, for the graduation of the first forty miles of the Selma and Tennessee Railroad. Proposals for the first six miles from Selma, will be received after the first of May, and acted on by the Board on the 15th May. Proposals for the ensuing 34 miles, will be received after the 10th May, but will not be examined until the 1st of August next, when the work will be ready for contract.

The line, after the first few miles, pursuing the flat of the Mulberry Creek, occupies a region of country, having the repute of being highly healthful. It is free from ponds and swamps, and is well watered—The soil is generally in cultivation, and is dry, light and sandy, and uncommonly easy of excavation.—The entire length of the line of the Selma and Tennessee Railroads, will be about 170 miles, passing generally through a region as favorable for health as any in the Southern Country.

Owing to the great interest at stake in the success of this enterprise, and the amount of capital already embarked in it, this work must necessarily proceed with vigor, and I invite the attention of men of industry and enterprise, both at the North and elsewhere to this undertaking, as offering in the prospect of continued employment, and the character of the soil and climate, a wide and desirable field to the contractor.

Proposals may be addressed either to the subscriber, or to General Gilbert Shearer, President of the Company.

ANDREW ALFRED DEXTER, Chief Engineer.
Selma, Ala., March 20th, 1837. A 15 tf

ROACH & WARNER,

Manufacturers of OPTICAL, MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS, 293 Broadway, New York, will keep constantly on hand a large and general assortment of instruments in their line.

Wholesale Dealers and Country Merchants supplied with SURVEYING COMPASSES, BAROMETERS, THERMOMETERS, &c. &c. of their own manufacture, warranted accurate, and at lower prices than can be had at any other establishment.

Instruments made to order and repaired. 14 1y

FRAME BRIDGES.

THE undersigned, General Agent of Col. S. H. LONG, to build Bridges, or vend the right to others to build, on his Patent Plan, would respectfully inform Railroad and Bridge Corporations, that he is prepared to make contracts to build, and furnish all materials for superstructures of the kind, in any part of the United States, (Maryland excepted.)

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington, two miles from the former place. Across the Metawamkeag river on the Military road, in Maine. On the national road in Illinois, at sundry points. On the Baltimore and Susquehanna Railroad at three points. On the Hudson and Patterson Railroad, in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contoocook river at Henniker, N. H. Across the Soubegan river, at Milford, N. H. Across the Connecticut river, at Haverhill, N. H. Across the Contoocook river, at Hancock, N. H. Across the Androscoggin river, at Turner Centre, Maine. Across the Kennebec river, at Waterville, Maine. Across the Genesse river, at Squakichill, Mount Morris, New-York. Across the White River, at Hartford Vt. Across the Connecticut River, at Lebanon, N. H. Across the mouth of the Broken Straw Creek, Penn. Across the mouth of the Cataraugus Creek, N. Y. A Railroad Bridge diagonally across the Erie Canal, in the City of Rochester, N. Y. A Railroad Bridge at Upper Still Water, Orono, Maine. This Bridge is 500 feet in length; one of the spans is over 200 feet. It is probably the FIRMEST WOODEN BRIDGE ever built in America.

Notwithstanding his present engagements to build between twenty and thirty Railroad Bridges, and several common bridges, several of which are now in progress of construction, the subscriber will promptly attend to business of the kind to much greater extent and on liberal terms. MOSES LONG.

Roheste r, Jan. 13th, 1837. 4—y

ALBANY EAGLE AIR FURNACE AND MACHINE SHOP.

WILLIAM V. MANY manufactures to order, IRON CASTINGS for Gearing Mills and Factories of every description.

ALSO—Steam Engines and Railroad Castings o every description.

The collection of Patterns for Machinery, is not equalled in the United States. 9—1y

NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers having formed a co-partnership under the style and firm of Folger & Coleman, for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm, the same superintendant and machinery are employed by the new firm that were employed by S. S. Durfee & Co. All orders will be promptly attended to, and ropes will be shipped to any port in the United States.

12th month, 12th, 1836. Hudson, Columbia County State of New-York.

ROBT. C. FOLGER,
33—tf. GEORGE COLEMAN,

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens Ames' superior back-strap Shovels
150 do do do plain do
150 do do do caststeel Shovels & Spades
150 do do Gold-mining Shovels
100 do do plated Spades
50 do do socket Shovels and Spades.

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed,) manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York.
BACKUS, AMES & CO.
No. 8 State street, Albany

N. B—Also furnished to order, Shapes of every description, made from Salsbury refined Iron v4—tf

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads.

No. 264 Elisabeth street, near Bleecker street, New-York.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on that part of the New-York and Harlaem Railroad now in operation J25tf

TO RAILROAD CONTRACTORS.

PROPOSALS will be received, at the office of the Hiwassee Railroad Com., in the town of ATHENS, TENNESSEE, until sunset, of Monday, June 12th, 1837; for the grading, masonry and bridges, on that portion of the HIWASSEE RAILROAD, which lies between the River Tennessee and Hiwassee. A distance of 40 miles.

The quantity of excavation will be about one million of cubic yards.

The line will be staked out; and, together with drainings and specifications of the work, will be ready for the inspection of contractors, on and after the 1st day of June.

JOHN C. TRAUTWINE,
Engineer in Chief Hiwassee Railroad.
16—6t.

RAILWAY IRON, LOCOMOTIVES, &c.

THE subscribers offer the following articles for sale.

Railway Iron, flat bars, with countersunk holes and mitred joints,

									lbs.
350 tons	2½	by	½,	15 ft in length, weighing				4 $\frac{69}{100}$	per ft.
280 "	2	"	½,	"	"	"	"	3 $\frac{89}{100}$	"
70 "	1¼	"	½,	"	"	"	"	2¼	"
80 "	1½	"	½,	"	"	"	"	1 $\frac{23}{100}$	"
90 "	1	"	½,	"	"	"	"	½	"

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2¼, 2¾ 3, 3¼, 3½, 3¾, and 3¾ inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

Indin Rubber Rope for Inclined Planes, made from New Zealand flax.

Also Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and stone block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

A highly respectable American Engineer, resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron &c. ordered through us

A. & G. RALSTON & CO.,
28 tf Philadelphia, No. 4, South Front st.

ARCHIMEDES WORKS.

(100 North Moor street, N. Y.)
NEW-YORK, February 12th, 1836.

THE undersigned begs leave to inform the proprietors of Railroads that they are prepared to furnish all kinds of Machinery for Railroads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Railroad, none of which have failed—Castings of all kinds, Wheels, Axles, and Boxes, furnished at shortest notice.

4—vtf H. R. DUNHAM & CO.

MACHINE WORKS OF ROGERS, KETCHUM AND GROSVENOR, Paterson, New-Jersey.

The undersigned receive orders for the following articles, manufactured by them, of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and despatch

RAILROAD WORK

Locomotive Steam-Engines and Tenders; Driving and other Locomotive Wheels, Axles, Springs and Flange Tires; Car Wheels of cast iron, from a variety of patterns, and Chills; Car Wheels of cast iron, with wrought Tires; Axles of best American refined iron; Springs; Boxes and Bolts for Cars.

COTTON WOOL AND FLAX MACHINERY,

Of all descriptions and of the most improved Patterns, Style and Workmanship.

Mill Geering and Millwright work generally; Hydraulic and other Presses; Press Screws; Calliendors; Lathes and Tools of all kinds, Iron and Brass Castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR
Patterson, New-Jersey, or 60 Wall street, N. 50tf